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Bibliography on Climate of the Arctic Basin

5 September 1954 No. 9

METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY

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*EDITORIAL OFFICE: Washington, D. C. P.O. ADDRESS: Box 1736, Washington 13, D. C. Telephone: REpublic 7–6278.

ADMINISTRATIVE OFFICE: American Meteorological Society, Office of Executive Secretary, 3 Joy Street, Boston 8, Mass.

* Address all business communications, orders and inquiries to the Executive Secretary, Mr. Kenneth C. Spengler, 3 Joy Street, Boston 8, Mass. Exchanges and reprints may be sent direct to P. O. Box 1736, Washington 13, D. C.

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METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY

MALCOLM RIGBY, Editor

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1919

SPECIAL FEATURE IN THIS ISSUE

A Selective Annotated Bibliography on Climate of the Arctic Basin

(For complete table of contents see back cover)

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FOREWORD

Meteorological Abstracts and Bibliography is a monthly publication whose purpose is to ng to the attention of meteorologists current literature in their field and in related fields and provide bibliographic information on various subjects, as interest demands.

Part I contains abstracts of current literature in the fields of meteorology, oceanography, ., arranged according to the Universal Decimal Classification.

Part II of each issue comprises a special annotated bibliography of important references a special subject. No attempt is made to prepare exhaustive bibliographies; instead, the n is to include a representative cross section of the various aspects of a subject.

Bibliographies published in the successive issues of Vol. 1, 1950 were:

Atmospheric Pollution, 2) Aerobiology, 3) Cloud Physics, 4) Hail, 5) Tornadoes, 6) Volcanic st, 7) Climatic Changes, 8) Thunderstorms, 9) Icing, 10) Acoustical Propagation and 11) aporation.

Those published in Vol. II, 1951 were:

Extended Forecasting, 2) Long Range Forecasting, 3) Soil Temperature, 4) Constants, Tables, ., 5) Climate of Near East, 6) Climate of Middle East, 7) Special Winds, 8) Radar Storm tection, 9) Condensation Trails, 10) Climate of Northeast Africa and 11) Mountain Meteorgy.

Other bibliographies previously published were:

No.	Mo.	Vol. III, 1952	Vol. IV, 1953
1.	Jan.	**Climate—Northwest Africa**	**Turbulence Theory**
2.	Feb.	**Carbon Dioxide**	**Turbulent Diffusion and Exchange**
3.	March	**Climate—Argentina, etc.**	**Frost and Frost Forecasting**
4.	April	**Dew**	**Climate of Australia and New Zealand**
5.	May	**Objective Forecasting**	**High Level Winds (500–100 mb)**
6.	June	**Stratus Forecasting**	**High Level Winds (above 100 mb)**
7.	July	**Urban Climatology**	**Jet Stream**
8.	Aug.	**Climate—Central Africa**	**Radiation Bioclimatology**
9.	Sept.	**Visibility**	**Climatology of the Pacific**
10.	Oct.	**Glaze and Rime**	**Auroras**
11.	Nov.	**Free Air Turbulence**	**Sferics**

Bibliographies published this year are:

1. **General Oceanographic Meteorology,** Vol. V, No. 1, Jan. 1954
2. **Climate of Southeast Asia and Netherlands Indies,** Vol. V, No. 2, Feb. 1954
3. **Physics of Auroras,** Vol. 5, No. 3, March 1954
4. **Tropopause,** Vol. 5, No. 4, April 1954
5. **Balloons,** Vol. 5, No. 5, May 1954
6. **Numerical Forecasting,** Vol. 5, No. 6, June 1954
7. **Radiation Data,** Vol. 5, No. 7, July 1954
8. **Vertical Motion,** Vol. 5, No. 8, Aug. 1954
9. **Climatology of the Arctic Basin,** Vol. 5, No. 9, Sept. 1954

Forthcoming bibliographies will be:

10. **Industrial Meteorology,** Vol. 5, No. 10, Oct. 1954
11. **Wind Waves and Swell,** Vol. 5, No. 11, 1954

Other bibliographies in preparation are:

Actinometers
Arctic Synoptic Meteorology
Climate of the Arctic
Cosmic Rays in the Atmosphere
Fog Forecasting
Indoor Climatology
Microwave Propagation
Night Airglow
Ocean-Atmosphere Energy Exchange
Ozone
Singularities
Snow Cover
Synoptic Aerology
Tropical Cyclones

Part III contains a listing of the contents of those journals which are primarily meteorogical. These are published in the earliest issue where space permits.

Part IV is made up of author, subject and geographical indexes. In the December issue mulative author, subject, geographical and journal indexes are published.

EXPLANATIONS

Location of material: For each entry, a symbol is given for at least one library where t material may be found. The Union List of Serials (Gregory) is the source of most of t symbols used. In some cases, where no symbol has been assigned to a library, one will devised according to the principles of the Union List.

Library symbols used frequently may be found in the following list:

DA:	U. S. Dept. of Agriculture Library, Washington, D. C.
DBS:	U. S. Bureau of Standards Library, Washington, D. C.
DGS:	U. S. Geological Survey Library, Washington, D. C.
DLC:	Library of Congress, Washington, D. C.
DN-HO:	U. S. Navy Hydrographic Office Library, Suitland, Md.
DSG:	U. S. Army Medical Library, Washington, D. C.
DSI:	Smithsonian Institution Library, Washington, D. C.
DWB:	U. S. Weather Bureau Library, Washington, D. C.
GB-MO:	Great Britain, Meteorological Office Library, Harrow, England.
MH-BH:	Harvard University, Blue Hill Observatory (and American Meteorologi Society) Library, Milton, Mass.

Other symbols:

*	before an entry indicates a good data source.
†	before an entry indicates a good bibliography.
!	before an entry indicates a synoptic case history study accompanied by char

Geographic locations are in the English form rather than the form used locally, for examp Moscow for Moskva.

Titles of articles or monographs are in the language of the original article unless otherw stated. Slavic (Cyrillic) titles are transliterated into the Roman alphabet according to Library of Congress transliteration scheme.

Abbreviations:

Titles of periodicals are not abbreviated, as a rule.

The months of the year from March to July are not abbreviated. Other months abbreviated as Jan., Feb., Aug., Sept., Oct., Nov., and Dec.

The word or abbreviation for Volume (Tom, Band, Jahrgang, Año, etc.), for Num (Heft, Fascicule, Vypusk, etc.) and for page or pages is omitted from most entries. Thu entry will read as follows:

Meteorologische Rundschau, 2(5/6):146–151, May/June 1950.

This indicates that the article appeared in *Meteorologische Rundschau*, *Jahrgang* 2 (2), *Heft* 5/6 (No. 5/6), *pages* 146–151, May/June 1950.

PART I. ABSTRACTS OF CURRENT MATERIAL

WORKS OF SPECIAL INTEREST

5.9–1 551.586:72

*†Aronin, Jeffrey Ellis, **Climate and architecture. Progressive architecture book.** N. Y., Reinhold Pub. Corp., **1953.** 302 p. 291 figs. bibliog. p. 282–296. **DLC**—This is said to be the first book ever published which deals exclusively and comprehensively with the field of climate and weather in relation to architecture or building design. It is supposed to be of interest to engineers, city planners, builders, climatologists, both student and professional, as well as architects; and to be useful as a textbook, a handbook, a bibliographic source for further reading and a readable book for the layman who lives in or plans to build a house. The first chapter goes extensively into the history of climatic design of houses or habitations from VITRUVIUS (3rd century A.D.) to the Eskimos, Aztecs, Incas, early settlers in Canada and the U.S.A. and other more recent examples. Pt. 2 deals with solar effects; direct and indirect solar radiation, solar houses for animals, poultry, etc. effect of latitude, altitude, exposure, season, cloudiness; use of overhangs, shutters, shade trees or vines, reflection from snow, sand and water (albedo), etc. Pt. 3, Temperature, takes up records of temperature, design for macroclimatic and microclimatic temperature conditions, effective temperatures, cooling power, and wind-chill. Pt. 4 deals with wind—wind measurements, design for large and small scale winds, vertical variations, wind breaks, effect of hills or of other (or the same) buildings, overhangs for ventilation, city planning. Pt. 5, entitled "Precipitation" goes into details of measurements, variations in U.S.A. (numerous isohyetal charts) and design for macro- and micro-conditions. Snow is one of the most important elements in the North. Protection against snow, ice, hail and rain by design, removal, shelter or painting, etc.; and against flood, occupies most of the chapter. "Dust precipitation" is also considered. Finally, lightning and humidity are considered briefly. The bibliography is unusually complete and up to date, and the illustrations (maps, charts, diagrams, photographs and line-drawings) interesting and effective from a popular and technical point of view. The meteorological data represented in tables, schematic diagrams and charts are most comprehensive. *Subject Headings:* **1. Building climatology 2. Town planning 3. Applied climatology bibliographies 4. Bibliographies on applied climatology.**—*M.R.*

5.9–2 551.578.46(494)

†*Bader, Henri; Haefeli, R.; Bucher, E. and others, **Snow and its metamorphism.** *U. S. Snow, Ice and Permafrost Research Establishment, Translation*, No. 14, Jan. **1954.** 313 p. tables, figs., bibliog. p. 302–303. This is a translation of their **"Der Schnee und seine Metamorphose,"** from *Beiträge zur Geologie der Schweiz, Geotechnische Serie, Hydrologie*, No. 3, **1939.** 350 p. illus. tables, 18 plates (some fold.). **DGC**—The original text, published in Switzerland in 1939, was a classic compilation of knowledge of snow mechanics as gained in the laboratory and field. The separate chapters are: I. Mineralogical and structural characterization of snow and its metamorphism, by H. BADER; II. Snow mechanics with references to soil mechanics, by R. HAEFELI; III. The time profile, a graphic representation of the development of a snow cover, by R. HAEFELI, H. BADER and E. BUCHER; IV. Snow investigations in the field, by J. NEHER; V. Investigations on conditions of density, temperature, and radiation of the Davos snow cover, by O. ECKEL and CHR. THAMS; Introduction by P. NIGGLI and appendix "Summary of the investigations by the Institute for Snow and Avalanche Research since 1940" by M. DE QUERVAIN. It represents the results of years of investigations conducted by the Snow and Avalanche Research Commission of Switzerland, since 1931 in the Parsenn-Weissfluhjoch area and at the Davos Meteorological Observatory. *Subject Headings:* **1. Snow mechanics 2. Snow surveys 3. Albedo of snow 4. Weissfluhjoch, Switzerland 5. Davos, Switzerland 6. Translations 7. Avalanche research. I. Neher, J. II. Eckel, O. III. Thams, Chr. IV. Niggli, Paul V. Van Tienhoven, Jan C.** (*trans.*).—*M.R.*

5.9–3 551.589

†Flohn, Hermann, **Witterung und Klima in Mitteleuropa.** [Weather and climate central Europe.] Stuttgart, S. Hirzel, **1954.** 2nd rev. ed. 214 p. 33 figs., 9 tables, bibli (538 refs.) p. 188–210, appendix of 27 plates and 2 maps. *Forschungen zur Deutschen Lan skunde*, Vol. 78. **MH-BH**—The first edition (1942) of FLOHN's unique textbook, was entit **"Wetter und Klima in Deutschland."** The present edition was ready for the press in Ma 1951, but since it was not published for 2 years, the author decided to leave the text int but to add references to recent literature up to the beginning of 1953 (68 refs.) in "Anha to the bibliography. The excellent bibliography is divided into several subject groupin methods and history of climatology (54 refs.), singularities (191), air masses (34 refs.), synop meteorology (50 refs.); climatology of central Europe (108 refs.) and miscellaneous (33 ref The text is divided into 6 major sections and one supplementary section as follows: I. Classi and modern climatology; II. Weather formulae and indications; III. Large scale weat situations of central Europe; IV. Seasonal variations in weather in central Europe; V. Clima changes and seasons; VI. On the synthesis of central European climate; and in suppleme 1) Dynamic climatic sketch of Austria (F. LAUSCHER), 2) Synoptic climatology of Switzerla (M. SCHÜEPP) and 3) Singularities and large scale weather relations. A detailed subj index and 29 plates and charts follow the bibliography. The general tenor of the text is dynamic-synoptic or aerological approach to climatology, of which the author is the strong proponent in Europe at present—although following the point of view of BERGERON and e the earlier one of VON FICKER in his attempt to explain the climate of central Europe in term frequency of synoptic weather types and the characteristics of the weather during each these types. The many aspects of physical climatology are not lacking, nor are numer and graphical examples of an analytical and (in recent edition) synthetic character. Lo or meso-climates, climate of the free atmosphere, climatology as an aid to synoptic forecast and even long range forecasting, astronomical as well as topographic influences, clima changes and (especially) singularities occupy a good portion of the text. Finally, the b serves as an excellent literature survey, for almost every subject treated is introduced b running summary of the work (especially that of German meteorologists) on the subj *Subject Headings:* **1. Dynamic climatology 2. Synoptic climatology 3. Climate of Cen Europe 4. Germany 5. Austria 6. Switzerland.**—*M.R.*

5.9–4 551.510.42:551.

Smog. *Royal Meteorological Society, Quarterly Journal*, 80(344):261–278, April 19 Includes: Absalom, H. W. L. **Meteorological aspects of smog,** p. 261–266, 12 figs., 16 re Wilkins, E. T. **Air pollution aspects of the London fog of December 1952,** p. 267–271, 2 fi table, 2 refs.; Oswald, N. C. **Physiological effects of smog,** p. 271–272, table; Discussio 272–278, 7 refs. **MH-BH**—ABSALOM described causes of radiation fog, incidence in G Britain, and gave details of fog of Dec. 5–9, 1952 with a list of notable fogs since 1918. W KINS set out daily measurements of smoke and sulphur dioxide at 12 places in and round Lon on Dec. 2–10, 1952, relation of deaths to pollution, and mapped SO_2 in relation to gas w and power stations. OSWALD referred to action of smog on sufferers from bronchitis asthma. In the discussion E. GOLD referred to pollution by CO and SO_2 from motor exha and gave calculations justifying analysis of air in busy streets. *Subject Headings:* **1. Sn I. Absalom, H. W. L. II. Wilkins, E. T. III. Oswald, N. C. IV. Gold, E.**—*C.E.P.B.*

5.9–5 551.51

†§*Hesse, Walter, **Untersuchungen über die Steuerung von isallobarischen Gebilden s über Dichtefelder und Massendivergenzen im Bereich von steuernden Aktionszentren.** vestigations on the steering of isallobaric patterns as well as on density fields and mas vergence in the sphere of influence of steering centers of action.] *Leipzig. Univer Physikalisches Institut, Veröffentlichungen, Ser. 2*, 16(2):59–214, **1952.** 1 graph (i 60 figs., 6 tables, 93 refs. **DWB**—A monograph integrating most of the current knowl on "steering" and analyzing numerous situations which occurred in Europe in 1942–44 as as the statistical frequency of various "steering" types at different seasons for the p 1935–44. The literature is thoroughly reviewed and a large bibliography on the su appended. Dynamic and other theoretical aspects are paramount in spite of the statis

and synoptic material used in support of the former. Density and mass divergence fields, n particular, are analyzed and illustrated schematically as well as from actual examples or statistics. *Subject Headings:* **1. Steering processes 2. Cyclone trajectories 3. Steering type data.**—*M.R.*

5.9–6 551.5(02)

†Johnson, John Clark (*Research Lab. of Physical Electronics, Tufts College*), **Physical meteorology.** N. Y., John Wiley; London, Chapman and Hall, **1954.** 393 p. numerous figs., tables, refs. at end of each chap., eqs., append. Price: $7.50. **DLC**—This modern textbook is the result of several years of teaching courses in physical meteorology at M.I.T. and research done by the author and colleagues at that institution. The subjects covered in separate chapters are: 1) atmospheric refraction, 2) scattering, 3) visibility, 4) radiation processes, 5) heat budget of earth, 6) atmospheric optics and turbidity effects, 7) cloud physics, 8) artificial precipitation, icing and radar meteorology, 9) atmospheric electricity, 10) ionosphere and ozonosphere, 11) temperature, density and humidity of upper atmosphere. The text presupposes knowledge of calculus. The bibliographies at the ends of the chapters are fairly extensive and well chosen and the text nicely edited and printed. An index completes the book. *Subject Headings:* **1. Physical meteorology 2. Textbooks.**—*M.R.*

5.9–7 551.510.53:546.33

†Miller, Lewis E., **Sodium in the upper atmosphere.** *U. S. Air Force. Cambridge Research Center, Air Force Surveys in Geophysics*, No. 43, June **1953.** 94 p. 3 figs., 4 tables, eqs. Section of abstracts, p. 23–91. **DWB**—A literature survey and analysis based on 120 papers on various aspects of the spectroscopic methods of determining the origin, existence, and variations in Na content of the upper atmosphere since the first discovery of the 5892 Å lines in 1929 by SLIPHER at Flagstaff, Arizona, and of other yellow lines in the emission spectrum of the night sky by SOMMER (1932), DUFAY (1933), CABANNES (1934) and others. The identification as Na was made in 1938 by CABANNES and DUFAY who showed that the atmospheric lines exactly coincided with the Na D_1 D_2 doublet. SLIPHER in 1929 suggested Na as the constituent of the atmosphere responsible for the yellow lines and W. C. JACOBS (1936) showed that sea salt was a permanent constituent of the atmosphere. CABANNES and DUFAY suggested cosmic or meteoric dust as a source and numerous authors suggest solar particles. The available data on height and density of Na atoms are listed according to author and quantity results are plotted and tabulated. Auroral and airglow spectral determinations are also treated. The abstracts are quite informative giving tabular results wherever possible. Theory is also presented. *Subject Headings:* **1. Sodium in atmosphere 2. Literature reviews 3. Abstracts.**—*M.R.*

5.9–8 551.574.1:551.578.11

Mordy, W. A. and Eber, L. E., **Observations of rainfall from warm clouds.** *Royal Meteorological Society, Quarterly Journal*, 80(343):48–57, Jan. **1954.** 9 figs., 2 tables, 16 refs. **DWB**—A very detailed study of rain on SE Oahu (Hawaii) in June 1952. Daily flights measured heights of top and bases of clouds over mounts and windward coast; rain fell, sometimes heavily, with cloud 5000 ft or more thick; lowest cloud top temperature 7°C. Daily rainfall distribution is mapped and hourly area × intensity given by recording gages plotted. Raindrop sizes were recorded from aircraft. Cumulus crossing mountain range showed increase of vertical motion, liquid water and maximum size of raindrops. The cloud structure in a rainy trade-wind day shows stratiform cloud overlying cumuliform and seeding the latter with relatively large drops. It is calculated that cloud does not reach freezing level on more than half the annual number of raindays. *Subject Headings:* **1. Rain from non-freezing clouds 2. Rainfall distribution 3. Oahu, Hawaiian Islands.**—*C.E.P.B.*

5.9–9 551.582.2:72(747, 749)

†[Olgyay, Victor; Olgyay, Aladar, Malone, Thomas F. and Friedman, Don G.], **Application of climatic data to house design.** Wash., D. C., Housing and Home Finance Agency, Div. of Housing Research, Jan. **1954.** 152 p. tables, numerous figs. Price: $1.00, from U. S. Govt. Print. Off., Wash., D. C. **DLC**—The bulk of the publication consists of reprinting of

progress reports made on a project set up at M.I.T. by the Housing and Home Finance Agen
It comprises a collection of 6 reports on various aspects of climate and building design, p
6 appended reports which represent the expanded results of working groups whose memb
compiled and devised numerous (>70) charts and diagrams to serve as examples of the man
in which raw climatic data can be presented in a form that is useful for architects, engine
and industrial consultants. The hope is expressed that the work can be extended to ot
regions of the country (the bulk of the data in this report applied only to the New York–N
Jersey area). The six parts are respectively: 1) Human bioclimatology, 2) Regional clim
interpretation, 3) Calculation of shading devices, 4) Radiation on various surfaces, 5) T
effect of radiation on orientation and site selection and 6) Solar radiation and heat transmiss
in dwellings. An interesting feature, aside from the usual bioclimatic or comfort charts is
illustration of ideal shading devices for different types of buildings in different clima
regions (Midwest, Pacific Northwest, Florida, Tropics, Central America, Sweden) and regio
shading charts and diagrams with detailed analysis or evaluation in engineering terms. Rad
tion data and charts for various latitudes, seasons, inclinations, sky conditions, and orientati
are very complete. The final chapter (by TOM MALONE) gives data calculated in terms
indoor parameters. *Subject Headings:* **1. Applied climatic data 2. Architectual climatol
3. Climatic data diagrams 4. New York–New Jersey area. I. U. S. Housing and Ho
Finance Agency. Div. of Housing Research.**—*M.R.*

5.9–10 551.508.91:551.507.352:551.574.1:551.50

Smith, E. J. and Heffernan, K. J., **Airborne measurements of the concentration of natu
and artificial freezing nuclei.** *Royal Meteorological Society, Quarterly Journal*, 80(344):182–1
April **1954.** 10 figs., 5 tables, 11 refs. **MH-BH**—An apparatus for observation of freez
nuclei by aircraft is described. Number of ice crystals estimated visually was recorded a
function of temperature and converted to concentration of freezing nuclei by an experimen
factor obtained with silver iodide smoke. Observations of natural freezing nuclei on
flights near Sydney, Australia, are analyzed. Temperature of complete glaciation was —
±1°C, highest temperature for 1 crystal/liter was around −20 to −24°C. Concentra
of nuclei around a silver iodide generator on the ground was plotted up to 1200 m hei
Subject Headings: **1. Nuclei counters 2. Cloud seeding 3. Condensation nuclei.**—*C.E.P.*

5.9–11 551.574.1:551.5

Thuman, William C. and Robinson, Elmer, **Studies of Alaskan ice-fog particles.** *Jou
of Meteorology*, 11(2):151–156, April **1954.** 9 figs., 10 refs. Also as: Stanford Research
stitute, Contract AF 19(122)–634, SRI Project CU-473, Scientific Report, No. 2, Sept. 30, 1
MH-BH, DWB—In 1952–53 studies of ice fog were made at Eielson air base near Fairba
Alaska. It occurred at temperatures below −30°C, was about 100 ft deep and at w
reduced visibility below 110 yds. Aerosol at various temperatures and visibilities was
lected by settlement on sheltered glass slides. Microphotos are shown. Particles
hexagonal plates, prismatic columns and much smaller spherical ice particles with rudimen
crystal faces, termed by author "droxtals"; these predominated below −26°C and were
at −38°C. These were due to direct freezing of supercooled droplets and were main c
of fog. Sizes of each type increased logarithmically with temperature. *Subject Head*
1. Ice fog 2. Aerosols 3. Alaska.—*C.E.P.B.*

5.9–12 551.58

†§*Trewartha, Glenn Thomas, **An introduction to climate.** 3rd ed. N. Y., McGraw
1954. 402 p. numerous figs., tables, bibliog. p. 5–6; 237–238, appendix. Price: $
DLC—This text has been completely revised and enlarged as compared with the 1937 and
editions, with 114 new illustrations and a few revised drawings. A new chapter has
added on climatic classification, and the results of 10 years of wartime and postwar res
in all parts of the earth incorporated in the text and illustrative material. The book is di
into two main sections. The first part deals with the systematic aspects of climate (insol
temperature, pressure, winds, moisture, precipitation, air masses, fronts, disturbance
associated weather types). Pt. II deals with the regional patterns of climate model
classification schemes; the author incorporates much more sophisticated concepts and c

evaluation of classification schemes and the like than is customary in geography textbooks. For instance, he shows the variability in temperature from day to day (non-periodic). The diurnal variation is shown to be of almost as great a magnitude as the periodic (seasonal) variations in some climates; and the variation from year to year in the boundaries of certain Köppen types cover a latitudinal or longitudinal range of 10°, which may be as great as the width of the belt itself when shown on a chart compiled from means. Furthermore, the regional climates are each described in terms of air mass or cyclonic frequencies, frontal passages and resultant weather conditions, and typical synoptic cases presented and discussed in addition to the usual charts of frequency of temperature and precipitation averages and extremes, thermoisopleth charts of diurnal temperature values throughout the year. THORNTHWAITE's 1948 classification, as well as his 1931 system are described in chapter on classification. Such recent concepts as vorticity, the jet stream, the zonal index and westerly waves have due consideration. In all, the book is a valuable text and a readable source of information on the climate and weather of all parts of the globe. *Subject Headings:* **1. Climatology textbooks 2. Climatic classifications 3. Textbooks.**—*M.R.*

GENERAL METEOROLOGY

See also: **Physical meteorology** (Johnson), 5.9–6.

5.9–13 551.5(02)

Harrington, Eldred Ray (*Albuquerque High School*), **Meteorology. 1953.** 291 p. numerous figs., tables. Mimeog. **DWB**—An up to date treatment of the entire field of meteorology and climatology for high school students. Each of the 17 chapters is supplemented by a number of questions to be answered by the student. Numerous "action" type photographs are scattered through the text and although the subject matter is excellent, the reproduction is so weak that in some cases the details of the illustration are not discernable. The many schematic diagrams or line drawings, on the other hand, are well reproduced. *Subject Headings:* **1. Elementary meteorology textbooks 2. Textbooks.**—*M.R.*

5.9–14 551.5(02) 551.58

Raĭnov, R., **Meteorologiia.** [Meteorology.] 2nd ed. rev. Sofia, Universitetska Pechatnitsa, **1948.** 520 p. 198 figs., tables, refs., eqs., table of symbols p. 517. **DLC**—An apparently standard college textbook on meteorology, this edition contains a number of unusual features which make it especially useful for training government meteorologists as well as those intending to engage in university or other fields where meteorology is required. The theoretical aspects are not neglected in the first chapters, the structure and composition of the atmosphere, gas laws, equations of motion, thermodynamics laws, etc. are taken up. Radiation in the atmosphere is treated in all of its aspects in Chap. II, with a great deal of illustrative data presented to give a quantitative basis for understanding the theory and applications of this most important element; temperature of the earth's soil and water surfaces comprises Chap. III; Temperature of the microclimatic layer, Chap. IV; of the upper atmosphere including the stratosphere, Chap. V; Water vapor, Chap. VI; Condensation and hydrometeors, Chap. VII; precipitation, Chap. VIII; pressure, Chap. IX; Wind, Chap. X; Turbulence, Chap. XI; General Circulation and monsoons, trades, etc., Chap. XII; Synoptic meteorology, Chap. XIII; Storms of various types, Chap. XIV; Short range and long range forecasting, Chap. XV; and Climatology, Chap. XVI. The last named chapter is especially slanted towards the climate of Bulgaria as many of the illustrations and applications in the other chapters. The point of view of a synoptic dynamic meteorologists is of course mentioned in all of the discussion on climatology, but the particular (i.e. agricultural) applications and the interests of the instrumental workers are not neglected. *Subject Headings:* **1. Meteorology textbooks 2. Climatology 3. Bulgaria.**—*M.R.*

5.9–15 551.5:519.24(02)

Morse, Philip McCord (*M.I.T.*) and Kimball, George E. (*Columbia Univ.*), **Methods of operations research.** 1st ed. rev. Publ. jointly by the Technology Press of Massachusetts Institute of Technology and Wiley and Sons, N. Y., **1951.** 158 p. figs., tables, 13 refs.,

eqs. **DWB**—A textbook on the relatively new and increasingly valuable field of operatio research, "a scientific method of providing executive departments with a quantitative ba for decisions regarding the operations under their control," written by two wartime membe of the Operations Research Group, U. S. Navy. Methods of operational research, statistic tools and procedures basic to such research (incl. probability and measures of effectivenes strategical kinematics, tactical analysis, gunnery and bombardment problems, operation experiments, and organizational and procedural problems are covered in consecutive chapte *Subject Headings:* **1. Operations research 2. Statistical techniques 3. Textbooks.**—*M.P.K*

5.9–16 551.5:0

†**A selected bibliography in meteorology. Meteorological periodicals in English.** *Weath wise*, 6(5):144–147, Oct. **1950.** 56 refs. **MH-BH**—A list of 12 popular, 6 elementary, 5 a vanced texts, 3 handbooks, 3 workbooks, 4 climatology texts, and 8 technical books wh could be used as supplementary texts is given, together with details of price, publisher an line or two about the content of each. Also there is a list of 15 periodical publications (6 fr U. S., 4 from England and 5 from Japan, India, S. Africa, Sweden and Switzerland, respective which would be of interest to those teaching or studying meteorology. *Subject Headin* **1. Meteorological textbook bibliographies 2. Meteorological periodical bibliograph 3. Textbooks 4. Periodicals.**—*M.R.*

5.9–17 551.5:026(

Keil, Karl, **Die Wetterdienstbibliothek als Archiv-Fachbibliothek im Rahmen der de schen Bibliotheken.** [The Weather Service library as a departmental archive-library in organization of German libraries.] *Meteorologische Rundschau*, 6(9/10):187–188, Sept./O **1953.** 3 refs. **DLC**—The library of a Weather Service can be more systematically compi in its special subject than a general library, and more efficiently documented. The recov of the Wetterdienst library since the war has been very rapid. *Subject Headings:* **1. Mete logical libraries 2. Germany.**—*C.E.P.B.*

5.9–18 551.5

American Standards Association. Sectional Committee on Letter Symbols, **Amer standard, letter symbols for meteorology.** N. Y., American Soc. of Mechanical Eng., 1 11 p. *American Standards Assoc. ASA Y10.*10–**1953.** Review by Harry Wexler in: *Sta ardization*, N. Y., 24(5):144, May **1953. DWB**—A committee was appointed by the Amer Meteorological Society to aid the American Standards Association in naming an authorita list of physical symbols for use in meteorological publications and for meteorological sym in other publications. A list of 152 symbols with corresponding dimensions and conc and 44 subscripts gives a good start toward the compilation of a useful glossary of such symb Principles used in preparing the list and in using the symbols are outlined in the text. *Su Headings:* **1. Meteorological symbols 2. Standardization of meteorological symbols. I. Ar ican Society of Mechanical Engineers II. American Meteorological Society III. We Harry.**—*M.R.*

5.9–19 551.5:5

Sneyers, R., **Statistiques météorologiques.** [Meteorological statistics.] *Ciel et T* Uccle, 69(9/10):255–259, Sept./Oct. **1953.** refs. **MH-BH**—A brief historical survey o development of statistical methods precedes a review of C. E. P. Brooks' and N. Carruth new "Handbook of statistical methods in meteorology," London, 1953. *Subject Head* **1. Statistics in meteorology 2. Reviews.**—*M.P.K.*

5.9–20 551.5:523.75:5

Bilancini, Raoul, **Il sole e la meteorologia terrestre.** [The sun and terrestrial me ology.] *Rivista di Meteorologia Aeronautica*, Rome, 13(2/3):92, April/Sept. **1953. MH-B** A critical review of a number of recent investigations on the connection between sola terrestrial phenomena, particularly the weather and magnetic storms. Abbot, Schei and the Duells, for example, have hinted at close relationships, but D. H. McIntosh C. E. P. Brooks have examined these statistically and critically and shown flaws in the

ments but all admitting some evidence for the hypotheses. The conclusion is that relationships undoubtedly exist but since the earth's atmosphere is not uniform with respect to cloudiness and other radiative or absorbing media, the effects will be complicated and often obscure. *Subject Headings:* **1. Solar-terrestrial relationships 2. Magnetic storms. I. Abbot, C. G. II. Scherhag, Richard.**—*M.R.*

5.9–21 551.5:621.315.051

Robertson, N. G. (*New Zealand Met. Service*), **Notes on weather factors affecting electric power transmission in New Zealand.** *Electric Supply Authority Engineers' Institute, Transactions*, 22:97–102, **1952.** 6 figs., 3 tables, refs. Abstracted from reprint. **DWB**—The yearly, as well as the daily range of temperature is a factor in design of electric power lines, since the strain endured at very low temperatures when lines are "tight" must be considered in opposition to the minimum overhead clearance which occurs in hot weather when lines are slack. Wind, ice load, etc. also add to the stress when cold weather prevails. Maximum wind load is set at 18 lb/sq ft for New Zealand (90 mph), though gusts of 94–112 mph have been recorded. Size of eddies in relation to span length is important in designing for gusts. Short period gusts must be differentiated from long period gusts in wind data analysis, as effects on lines and maximum speeds differ in the two types. Most records are made at places not overly exposed to high gust velocities. *Subject Headings:* **1. Engineering meteorology 2. Power lines 3. Wind load on wires 4. New Zealand.**—*M.R.*

5.9–22 551.5:621.3

Suits, C. G. (*General Elec. Co., Schenectady, N. Y.*), **Seventy-five years of research in General Electric.** *Science*, 118(3069):451–456, Oct. 23, **1953.** 5 figs. **DWB**—General Electric grew out of the researches of THOMAS EDISON who was given ample funds for research when the company was organized in 1878. STEINMETZ was taken into the company soon after, and he and E. W. RICE in 1900 conceived the idea of a laboratory devoted to pure scientific research to support future engineering technical development. In 1914 this laboratory had a building all of its own. I. LANGMUIR joined the outfit in 1909 and developed the electric lamp filled with rare inert gases rather than evacuated. In Oct. 1950 a 260 acre site with spacious quarters was occupied by the laboratory. Work on experimental meteorology of LANGMUIR and SCHAEFER is also reviewed. *Subject Headings:* **1. Meteorological research 2. Experimental meteorology 3. General Electric Co. I. Langmuir, Irving.**—*M.R.*

5.9–23 551.5:62 551.58:6

Jacobs, Woodrow C. and Spreen, William C., **Some climatological problems associated with assignment of engineering design criteria.** *American Meteorological Society, Bulletin*, 34(10):462–467, Dec. **1953.** 3 figs., 2 tables, ref. **MH-BH**—The solution of the problems associated with the assignment of engineering-design criteria requires the full cooperation of the engineer and the meteorologist. It is a problem necessitating an applied climatological study that is tailored to the specific requirements of the engineer. To properly perform this specialized service, the climatologist must be fully informed of the operational efficiencies with respect to the weather elements that are desired and also the exact circumstances under which the equipment will function. This article discusses the information required by the climatologists to prepare an adequate study and illustrates some of the effects of changing operational criteria. *Subject Headings:* **1. Engineering meteorology 2. Applied climatology.** —*Authors' abstract.*

5.9–24 551.5:620.193.21

Holmes, B. M. (*Div. of Bldg. Res., Australian Commonwealth Sc. and Ind. Res. Organization*), **Deterioration problems of materials and structures in hot climates.** National Research Council, Wash., D. C., Building Research Advisory Board, Housing and building in hot-humid and hot-dry climates, Nov. 18–19, 1952, **Proceedings,** p. 96–108, **1953.** figs., 41 refs. **DWB**—A summary of published data and of personal observations made by the author in tropical regions. The discussion includes the effect of high temperature, humidity and radiation upon building materials, the role of destructive biological agents, and the performance of metals, concrete and cement products, masonry and earth, and organic building materials.

Photographs of various types of deterioration and an outline of the type of studies on performance of building materials that need to be made are presented. *Subject Head* **1. Deterioration of building materials.**—*I.L.D.*

5.9–25 551.5:621.

*Dryar, Henry A. (*Phil. Electric Co.*), **The effect of weather on the system load.** *Ameri* *Institute of Electrical Engineers, N. Y., Transactions*, 63:1006–1013, **1944.** 7 figs., 23 tab Photostat. **DWB**—The system load of an electric power company consists usually of a fi component or base load and a variable component, such as the weather. In order to obse in the load estimate the effect of the weather upon the system load, the base load must determined. The latter is a matter of weighing the temperature, cloudiness and the w velocity and applying the combined weights as a percentage to the system load. The termination of the base load, the weighing of the weather, the use of the temperature base weighing the effect of predicted weather are illustrated. The temperature effect during summer, fall and winter, the effect of extreme temperature changes, of temperature extren the effect of cloudiness on day load, at dusk on night load, the effect of inclement weather ground snow and cloud reflection, and role of wind in demand, are discussed with the ai actual examples. *Subject Headings:* **1. Electric power system loads 2. Weather effect** *I.L.D.*

5.9–26 551.

Lev Semenovich Berg. [Obituary.] *Leningrad. Universitet, Uchenye Zapiski*, 152; *Seriia Geograficheskikh Nauk*, No. 8, **1952,** p. 3–5. Also: Murzaev, E. M., **Lev Semenov Berg kak geograf.** [Lev Semenovich Berg, geographer.] *Voprosy Geografii*, No. 24. *cheskaia Geografiia*, p. 13–26, **1951.** refs. **DLC.** Gvozdetskiĭ, N. A., **Lev Semenovich B kak issledovatel' Sredneĭ Azii.** [Lev Semenovich Berg, explorer of Middle Asia.] *I* p. 42–51. 59 refs. **DLC**—Died Dec. 24, 1950, 74 years old. One of the principal Rus geographers, Berg published over 600 works; many of them deal with climatological probl for example "Fundamentals of climatology," "Climatic changes in history," "Climate life" and several books on the geography of the Soviet Union. *Subject Headings:* **1. Obitua 2. Climatology 3. Berg, L. S. I. Murzaev, E. M. II. Gvozdetskiĭ, N. A.**—*A.A.*

5.9–27 551.

Bergeron, Tor, **Vilhelm Bjerknes och hans livsverk.** [Vilhelm Bjerknes and his life w *Uppsala. Universitet. Meteorologiska Institutionen, Meddelande*, No. 30, **1952.** 24 p. **DWB.** Also: Godske, C. L., **Vilhelm Bjerknes.** *Naturen*, 76(2):34–48, **1952.** And H mann, F., in *Naturwissenschaftliche Rundschau*, 5(5):218, May, **1952.** Sans Huelin, Guille **Necrologiia. Profesor V. F. K. Bjerknes.** [Obituary. Professor V. F. K. Bjerk *Revista de Geofisica*, Madrid, 10(39):257–258, July/Sept. **1951. DWB.** Sverdrup, H Ulrik, **Vilhelm Bjerknes in memoriam.** *Tellus*, 3(4):217–221, Nov. **1951. MH-E** BERGERON's "Vilhelm Bjerknes och hans livsverk" is the most complete of the num obituaries which have appeared since his death in 1951. The influence of his father, BJERKNES, a renowned mathematician and physicist, is emphasized. V. BJERKNES published a contribution to the application of hydrodynamic theory to the mechanics atmosphere and the oceans in 1898. He numbered among his collaborators EKMAN, S TRÖM, ASSMANN, HELLAND-HANSEN, etc. In 1913 he was made director of the new physical Institute of Leipzig University. HESSELBERG, SVERDRUP, J. BJERKNES, SOL BERGERON and many others were famous students of V. BJERKNES. He was born Marc 1862 and died April 9, 1951. *Subject Headings:* **1. Bjerknes, Vilhelm F. K. 2. Obitu 3. Biography. I. Godske, C. L. II. Rossmann, F. III. Sans Huelin, Guillermo IV. drup, H. U.**—*M.R.*

5.9–28 55

†Picotti, Mario, **Francesco Vercelli.** *Trieste. Istituto Talassografico, Publicazion* 291, **1953.** 8 p. port., chronological list of his publications, p. 6–8. Reprinted fro *Ricerca Scientifica*, Rome, 23(2):277–282, Feb. **1953. DWB.** Also by Bilancini, F *Rivista di Meteorologia Aeronautica*, 12(4):35–36, Oct./Dec. **1952.** port. And by Mora

uiseppe in: *Rivista Geografica Italiana*, Florence, 50(2):229–231, June **1953. DWB**—In is biographical sketch (first article) the scientific work of F. VERCELLI (1883–1952) is out- ned. Throughout his active life, VERCELLI held leading assignments at several Italian ientific institutes and universities. His activities extended over a variety of fields, such as allistics, oceanography, geophysics, meteorology, climatology, oil prospecting, seismology, otics, etc. His contribution to science is reflected in the chronological list of his publications ppended to the article in 122 entries. His principal works are "Aria" (*see item* 4.8–16, Aug. 953, *MAB*) and "Il mare, i laghi, i ghiacciai" (*see item* 5.4–5, April 1954, *MAB*). The second nd third articles contain shorter accounts of VERCELLI's scientific activities. *Subject Headings:* **Vercelli, Francesco 2. Biography 3. Meteorologists 4. Bibliographies 5. Obituaries. Bilancini, R. II. Morandini, Guiseppe.**—*G.T.*

5.9–29 551.5:92

Sheppard, P. A., **Dr. L. F. Richardson, F.R.S.,** *Nature*, London, 172(4390):1127–1128, ec. 19, **1953. DWB.** Also similar articles by Ashford, O. M. in: *Weather*, 9(1):25, Jan. 954. **MH-BH.** Brunt, David, in: *Royal Meteorological Society, Quarterly Journal*, 80(343): 27–128, Jan. **1954. DWB.**; and **Obituary, Lewis F. Richardson,** *Meteorological Magazine*, ondon, 83(979):27–30, Jan. **1954.** 31 refs. **MH-BH**—LEWIS FRY RICHARDSON, born ewcastle 1881, died Kilmun, Argyllshire, Sept. 30, 1953. Superintendent of Eskdalemuir bservatory 1913–1916. Wrote: "Weather prediction by numerical process" (1922), "The pply of energy from and to atmospheric eddies" (1920) introducing "Richardson's number." fter 1920 teaching physics; Hon. Sec., R. Meteor. Soc. 1921–24, F.R.S. 1926. *Subject eadings:* **1. Obituaries 2. Richardson, L. F. I. Ashford, M. O. II. Brunt, David.**—*C.E.P.B.*

5.9–30 551.5:92

Poser, Hans, **In memoriam Wilhelm Meinardus.** *Petermanns Geographische Mitteilungen*, 7(4):241–245, **1953.** photo, 14 refs. **DLC**—An account of his life and appreciation of his ork. Born 14.7.1867 at Oldenburg, died 28.8.1952 at Göttingen. In work on climate of .E. Indian Ocean (1893) recognized importance of intertropical convergence zone. Worked p meteorological observations of German S. Polar Expedition 1901–3, discussing water economy Antarctic continent and analyzing Southern Hemisphere circulation. Bibliography gives st of titles about his life and work. *Subject Heading:* **1. Biography 2. Meinardus, W.**— *E.P.B.*

METEOROLOGICAL OBSERVATIONS AND INSTRUMENTS

METHODS OF OBSERVATION

See also: **Zonal index,** (Saito), 5.9–128; **Effective humidity,** (Sasaki), 5.9–210; **Quantitative analysis of vertical struct. of precip.** (Langille, others).

5.9–31 551.501.3:551.55:530.886

Vilkner, Hans, **Diagramm zur Bestimmung des Fehlers beim Mitteln von Windstärken n Beaufort.** [Diagram for determining the error in the mean values of wind intensities xpressed in the Beaufort scale.] *Zeitschrift für Meteorologie*, 7(8):226–237, Aug. **1953.** g., 9 tables, 4 refs. **MH-BH**—A comparison of mean wind velocities expressed in Beaufort nits with wind velocities expressed in linear units such as km/h or m/s reveals that the former re always lower than the latter. Beaufort daily means of surface wind may be 10 to 50% o low and monthly and annual means 10% too low. The author describes the construction an empirical diagram by means of which it is possible to determine the error inherent in eaufort readings. It involves the recalculation of 1/10 Beaufort units into km/hr and king into consideration the nonlinearity in the midpoint of the interval. The diagrams are produced and tables giving numerical values for the wind intensity error diagrams in Beaufort nits in km/hr and m/s, are presented; the use of the diagram is illustrated and its precision discussed. *Subject Headings:* **1. Beaufort scale 2. Wind velocity.**—*I.L.D.*

5.9–32 551.501.4:551.50

Kovačević, M. (*Belgrade*), **Neka objašnjenja za način obrade podataka meteorološk osmatranja.** [The handling of reports on meteorological observations.] *Yugoslavia. Hid meteorološka Služba, Vesnik*, 2(1):5–8, Jan./March **1953. DWB**—The system of collecti and dissemination of data, maintained by the Yugoslav Hydrometeorological Service, described. Data on daily observations are received monthly at the state hydrometeorologi services (directly from major stations, and through section centers from rainfall station The author describes the method of computation and control applied to the data before th are published in the monthly and annual reports. *Subject Heading:* **1. Data processing.**—*G*

5.9–33 551.501.4:551.55(

U. S. Air Weather Service, **Wind extrapolation device (AWS-WPC-10-4).** *U. S. Weather Service, Technical Report*, 105–114, Nov. **1953.** 10 p. 12 figs. **DWB**—This me orandum discusses some of the various vectorial operations which can be performed with newly-designed Wind Extrapolation Device. The device is being supplied to AWS units a detachments as AWS-WPC-10-4. It may be used to: a) find the wind shear (approximat the thermal wind) between two levels; b) determine winds up and down from a consta pressure surface chart; c) find the mean wind for a layer of the atmosphere; d) determ wind-vector errors for forecast verification purposes. *Subject Headings:* **1. Wind computa 2. Vectors 3. Manuals.**—*From authors' introduction.*

5.9–34 551.501.45:551.

Dickson, Robert R., **Some selected spherical vorticity computations.** U. S. Weat Bureau, Extended Forecast Section, Feb. **1951.** 5 p. 4 figs., tables. Carbon of typescr **DWB**—Tables were constructed along the lines of those constructed by PLATZMAN (19 giving the constant absolute vorticity trajectory data for a spherical earth for both amplit and quarter wave length. Ten computations were made for constant wind speed (20 m Results are shown graphically on charts of the Northern Hemisphere for the 10 different ca Given an initial west wind, a definite wave pattern with a considerable amplitude is obtai If the angle is increased slightly the upper half wave length and amplitude become m smaller than the lower, but with increasing initial angle the reverse becomes the rule. *Su Headings:* **1. Spherical vorticity trajectories 2. Vorticity computations.**—*M.R.*

5.9–35 551.501.45:5

Ellison, T. H., **On the correlation of vectors.** *Royal Meteorological Society, Quar Journal*, 80(343):93–96, Jan. **1954.** table, ref., 15 eqs. **DWB**—The regression of one v on another is calculated and a quantity termed the correlation ratio which varies from to unity as the first vector is independent of or completely determined by the second. pressions analogous to partial and total correlation are also derived. *Subject Heading:* **1. V correlation.**—*C.E.P.B.*

5.9–36 551.501.45:55

Haurwitz, Bernhard and Sawada, R., **The approximate computation of atmosp oscillations. I. Zonally symmetrical oscillations.** New York University. College of gineering. Research Div., Contract AF 19(122)-49, Scientific Report, No. 2, Sept. 6 refs., eqs. **DWB**—A method is given for the rapid computation of the free periods o zonal oscillations of a rotating fluid shell if the oscillation and its period are known for a value of the physical parameter and are to be found for slightly different values of th rameter. The method can be extended to take into account the effect of latitudinal perature gradient. *Subject Headings:* **1. Methods of computation 2. Rotating spherical s I. Contract AF 19(122)-49 II. New York University. College of Engineering. Res Div.**—*Author's abstract.*

5.9–37 551.501.6:551

Tanaka, Bunji, **A graphical method of standard pressure surface height determi from aircraft reports.** *U. S. Air Force, 2143D Air Weather Wing, Technical Bulletin* 8:7–12, Jan. **1952.** 3 graphs, 5 eqs. **DWB**—Nomograms are presented for quick calcu

height (in feet) of 850, 700 and 500 mb surfaces from aircraft reports of pressure altitude d temperature in POMAR code, without use of tables or algebraic addition of values obtained erefrom and "D values." Examples of use of charts are given. *Subject Headings:* **1. Pres-e height calculations 2. POMAR reports 3. Synoptic analysis.**—*M.R.*

5.9–38 551.501.81:551.578.41

Gunn, K. L. S.; Langleben, M. P. and Dennis, A. S., **Radar evidence of a generating level snow.** *Journal of Meteorology*, 11(1):20–26, Feb. **1954.** 8 figs., 4 refs. **MH-BH**—ecipitation patterns recorded in winter 1951–52 at Montreal are studied. Height of echo o in parabolic trail patterns generally agreed with "velocity height" of a generating element, owing that top of radar echo was moving with speed of wind at its level. Echo height also reed with height of top of main middle cloud. In stable conditions echo top averaged 1700 above frontal surface. Intercorrelations, which are mostly above 0.85, are shown sche-atically. Relations to generation of snow crystals are discussed. Results point to long-ed snow generating elements in a shallow active layer of stratiform cloud across a frontal rface. *Subject Headings:* **1. Radar analysis of snow 2. Montreal, Canada.**—*C.E.P.B.*

5.9–39 551.501.81:551.577

Jones, R. F., **Radar echoes from precipitation.** *Marine Observer*, 24(163):31–35, Jan. **54.** 8 figs., 5 refs. **MH-BH**—Discussion of observations of precipitation by 3 and 10 cm dar illustrated by PPI and vertical cross-section photos. Interpretation of observations is scussed; radar supports origin of rain from ice-crystals when vertical currents are small, d by growth of raindrops in large vertical currents. *Subject Heading:* **1. Radar precipitation hoes.**—*C.E.P.B.*

5.9–40 551.501.81:551.515.4(676)

Perry, R. E., **The radar detection of dangerous storms.** *Institute of Navigation, Journal*, 3):238–239, July **1953.** 2 figs., table. **DWB**—Description of a radar equipment at Entebbe rport, Uganda, to detect Cu nb clouds at long ranges and provide warnings over 45,000 sq mi. specimen PPI of Cu nb cells is reproduced. *Subject Headings:* **1. Radar storm detection East Africa.**—*C.E.P.B.*

5.9–41 551.501.81:551.311.181

Perry, R. E., **A record of radar performance in ice conditions. Extracts from a log.** *stitute of Navigation, Journal*, 6(1):74–85, Jan. **1953.** 16 figs., 3 tables. **DWB, DLC**—ecord of observations on voyage from Cardiff to Port Churchill and back, on location of ice-rgs. Effect of ice and cold water on radar horizon through sub-refraction discussed. *Subject eadings:* **1. Radar echoes 2. Sea ice.**—*C.E.P.B.*

5.9–42 551.501.81:551.515.3

Radar tracks an Illinois tornado. *Weatherwise*, 6(3):76–77, June **1953.** photo. **MH-H**—Three remarkable radar photographs taken at 1716, 1719 and 1733h on 9 April, 1953 the Radar Meteorology Station of the Illinois State Water Supply near Champaign, Ill., ow what appears to be the tornado vortex appendage to a rapidly moving (50 mph) thunder-orm in 3 stages of its development. A destructive tornado actually was reported at the time id place shown by the series of time lapse photos from which these were selected. The echo ems to be larger on a horizontal scale than the tornado itself could have been. *Subject eadings:* **1. Tornado tracking 2. Radar photographs 3. Champaign, Ill.**—*M.R.*

OBSERVATIONAL DATA

5.9–43 551.506.1(961.5)

*Fiji. Meteorological Office, **Annual Meteorological Report.** First issue recd., 1910; ast issues recd., **1940, 1945.** mostly tables. Running title of most sections: "Meteoro-gical observations." Format varies. "Issue for 1950 to be available shortly; reports for e missing years to be published if possible." **DWB**—Text for the 1945 publication reviews anges in the meteorological organization since 1938 and gives types and location of in-

struments used for climatological purposes. Tables show monthly pressure, mean and extre temperature and humidity and yearly wind direction at 6, 12, 18 and 24 hours; monthly clo amount, sunshine, visibility and wind force and speed for Suva and Lautoka; monthly me and extreme temperature, humidity and rainfall for Nadarivatu and Sigatoka and monti rainfall for 51 stations with years of record. *Subject Headings:* **1. Annual meteorologi reports 2. Fiji Islands.**—*M.L.R.*

5.9–44 551.506.1(

*Huancayo, Peru. Instituto Geofísico, **Boletín sísmico y meteorológico.** No. 1/3, Ja March **1952.** chiefly tables. **DWB**—With this first issue of its monthly bulletin (the bullet for Jan., Feb. and March are bound together, each consisting of an introductory page an pages of tables) the Geophysical Institute of Huancayo begins the publication of curr observational data (unpublished data exist for the period 1921–1951). The tables presen include observed daily values of wind, clouds, pressure, temperature and humidity; hou pressure and wind observations; wind frequencies; sunshine hours, and instrumental err The meteorological bulletin is issued as the second part of the combined seismological meteorological bulletin. *Subject Headings:* **1. Monthly data bulletins 2. Observational d 3. Huancayo, Peru.**—*G.T.*

5.9–45 551.506.1:551.579(4

*Italy. Ufficio Idrografico della Sicilia, Palermo, **Annali idrologici, 1941, parte secon 1949, 1950.** [Hydrologic yearbook, 1941. Pt. 2, 1949 and 1950.] All pub. in Rome, 19 Each issue with 79–88 p. numerous figs., tables, maps. **DWB**—Routine features of well organized hydrologic yearbook: daily precipitation, maximum and minimum tempera with monthly means and long period averages, high intensity precipitation, snow, mont means of precipitation for catchment areas, daily heights of water level. Summaries of hydrologic balance include basin characteristics (area, permeable part, height of the ba normal irrigation amounts) and give daily discharges and their duration, monthly mean precipitation, runoff and apparent losses for the given year and the whole period of observa The ground water conditions are briefly characterized and a map of annual rainfall is ad (For abstract of Hydrologic Yearbook, 1941, Pt. I, *see* 3.10–47, Oct. 1952, *MAB.*) *Su Headings:* **1. Annual meteorological reports 2. Hydrologic yearbooks 3. Climatic 4. Hydrologic cycle 5. Sicily.**—*A.A.*

5.9–46 551.506.1(4

*Malta. Royal University. Observatory, **Meteorological records of the month Jan.–Dec. 1951.** 12 pieces. all tables. **DLC**—Single sheets of tabulated daily syn data obtained at the observatory. The elements covered are pressure, temperature wet, max., min., min. on grass, black bulb), sunshine, wind, condition of the sea, vapor pres humidity, rain and cloudiness. *Subject Headings:* **1. Synoptic data 2. Observational 3. Monthly Meteorological reports 4. Malta. I. Craig, E.**—*G.T.*

5.9–47 551.506.1

*Netherlands. (K.) Meteorologisch Instituut, **Jaarboek, A, Meteorologie, 1951.** [book, A, Meteorology, 1951.] Its *No.* 97, publ. **1952.** 94 p. mostly tables. Text in F and Dutch. Price: f 7.50. **DWB**—A standard presentation of daily or thrice daily obs tions of ordinary meteorological elements and monthly and annual totals of precipitatio averages of the other elements, together with list of stations and observers. Since 193 daily rainfall data have been published in a separate publication (*see item* 3.2–26, Feb. *MAB*). This is the 103rd annual report for the Netherlands. *Subject Headings:* **1. A meteorological reports 2. Observational data 3. Netherlands.**—*M.R.*

5.9–48 551.506.1

*Netherlands. (K.) Meteorologisch Instituut, **Maandelijks Overzicht der We steldheid in Nederland, 1952.** [Monthly summaries of weather conditions in the Nether 1952.] Its *No.* 94a, publ. **1953.** Loose leaf, 1 leaf per month, and covers. figs., t **DWB**—A great deal of data are presented in tabular and graphic form for each month a

he year as a whole, and are discussed and analyzed from a synoptic as well as a statistical oint of view. Each months report covers both sides of a large page with quite fine print nd condensed visual presentation of data. Surface data are summarized for the first order tations and upper air temperatures and wind for De Bilt (0–5000 m). *Subject Headings:* . **Monthly climatic summaries 2. Climatic data 3. Netherlands.**—*M.R.*

5.9–49 551.506.1:551.577(492)

*Netherlands. Meteorologisch Instituut, **Regenwaarnemingen.** Observations Pluvio- ietriques, 1951. [Rainfall observations, **1951.**] Its: *No. 117*, pub. 1952. 75 p. entirely ables. Price: francs, 3.00. **DWB**—Since 1932 the records of daily precipitation at the 300 tations recording precipitation in the Netherlands have been published separately from the yearbook" wherein the totals for each month are published. The present series is compiled y machine tabulation and photo reproduction of the daily totals at 300 stations comprising he entire network. No annual totals are included. The highest daily amounts for each tation for each month are underscored. *See item* 3.2–26, Feb. 1952, *MAB* for 1948 and 1949 ssues (combined). 1950 has also been published. *Subject Headings:* **1. Observational data . Precipitation data 3. Runoff data 4. Annual precipitation bulletins 4. Netherlands.**— *M.R.*

INSTRUMENT CARRIERS

See also: **Air-borne cloud measurement** (Fraser), 5.9–67; **Pressure, density and temp. of earth atmos.,** 5.9–92.

5.9–50 551.507.2

Brodovi u meteorološkoj službi na sjevernom Atlantiku i sjevernom Pacifiku. [Weather hips in the North Atlantic and North Pacific.] *Split, Yugoslavia. Hidrografski Institut Mornarice. Meteorološki Otsjek, Vremenske Prilike*, 3(1/2):47–48, July **1948.** 2 tables, figs. **DWB**—Positions and radio identification signals of 4 Atlantic and 5 Pacific weather hips are listed. Equipment and activities of the ships are described. The illustrations are:) schematic drawing of ship and instrumentation, 2) chart showing positions of North Atlantic eather ships and 3) photograph of pilot-balloon launching. *Subject Heading:* **1. Weather hips.**—*G.T.*

5.9–51 551.507.362

Demiańczuk, P. P., **Wykorzystanie rakiet dla badań gornych warstw atmosfery.** [Util- ation of sky-rockets for the investigation of upper layers of the atmosphere.] *Gazeta Ob- erwatora PIHM*, Warsaw, 4(11):12–15, Nov. **1951.** 2 figs., 5 eqs. **DWB**—A popular xposition of methods of investigating the upper layers of the atmosphere (above 30 km over ea level) by means of rockets is presented and discussed. After giving a description of the tructure, theory and working principles of the rocket, the author points out the requirements he apparatus has to meet in order to satisfy the demands of meteorology, presents a list and description of measuring instruments set up in the rocket and the manner they operate at he moment of measurement: viz., the spectrograph for measuring cosmic radiation and the evice for taking samples of the air (which is usually combined with the instrument measuring ressure). *Subject Headings:* **1. Rockets 2. Rocket instrumentation 3. Upper air obser- ation.**—*A.M.P.*

INSTRUMENTS

See also: **Measurm. of concentr. of freezing nuclei** (Smith, Heffernan), 5.9–10; **Determ. moisture gradients from radiosonde records** (Bunker), 5.9–212; **Nucleus concentr. as measured by an Aitken counter** (Moore), 5.9–218; **Differ. between eye observat. and pilot balloon measurm. of cloud** (Saito), 5.9–228

5.9–52 551.508.77

Gunn, Ross, **Electronic apparatus for the determination of the physical properties of reely falling raindrops.** *Review of Scientific Instruments*, 20(4):291–296, April **1949.** 4 figs., refs., eq. **DLC**—An outline of principles, design and calibration of an electric recorder

of mass, fall velocity, evaporation rate, and the transported electrical charge of the ind vidual falling raindrops. A transparent master chart (shown) of relative dropsize diamete placed onto the spots actually caused by falling raindrops on a blue print paper, will identi masses and radii of the drops. *Subject Headings:* **1. Electronic recorders 2. Raindrop mea urement.**—*W.N.*

5.9–53 551.508.

Casella, C. F. and Co., Ltd., London, **Aspirated hygrometer.** Its *Leaflet* 798, [1953] 7 p. photo. **DWB**—A modified version of the Assman psychrometer is described. High speed of aspiration and modernized mounting are the two principal improvements. *Subj Heading:* **1. Aspiration psychrometers.**—*G.T.*

5.9–54 551.508.

Casella, C. F. and Co., Ltd., London, **Frost point hygrometer.** Its *Leaflet* 788, [1953] 7 p. photo. **DWB**—The hygrometer described in this leaflet was originally developed use in high flying aircraft, to measure water vapor amount in the upper air, but can be appl to other purposes. Its basic principle is to pass the air or gas under test over a cooled surfa (thimble) the temperature of which is adjusted to be covered with a deposit of dew or fro The purpose is to measure the temperature of the thimble at which the deposit is in equilibri with the air or gas. This is done by means of a platinum resistance thermometer. T instrument has an elaborate viewing and illumination system. Frost points can be measu down to temperatures of −90°C. *Subject Heading:* **1. Dobson-Brewer frost point hygrome** —*G.T.*

5.9–55 551.508

Cutting, C. L. and Jason, A. C., **A simple apparatus for the calibration of hygrome** *Journal of Scientific Instruments*, 30(9):338–339, Sept. **1953.** fig., 2 refs. **DLC**—Satura air at a known temperature t_1 is passed through a narrow tube containing an element a higher temperature t_2. Calibrations have been satisfactorily performed at dew points − to +70°C. *Subject Heading:* **1. Hygrometry.**—*C.E.P.B.*

5.9–56 551.508.71:551.

Edney, E. B., **The construction and calibration of an electrical hygrometer suitable microclimatic measurements.** *Bulletin of Entomological Research*, 44:333–342, **1953.** 5 fi 6 refs. **DA**—Describes with wiring diagram a recording hygrometer 10×6×6 mm la Electrodes of platinum-clad nickel-iron wire, wound round with a spiral of glass-fibre y impregnated with a 1% solution of calcium chloride. A constant alternative voltag applied across electrodes; current which varies with humidity is measured by a microamm Calibration is described. Accuracy 1% R.H. lag about 5 min. Cannot be exposed to midities above 98%. Air temperature is measured by a fine thermocouple attached to e element. *Subject Headings:* **1. Electrical hygrometers 2. Micrometeorology.**—*C.E.P.B.*

5.9–57 551.50

Elnesr, Mustapha, **Mesure directe du gradient de l'humidité.** [Direct measuremen humidity gradient.] *Académie des Sciences, Paris, Comptes Rendus*, 237(20):1270–1 Nov. 16, **1953.** 7 eqs. **DWB**—An instrument consisting of two thermocouples measu dry and wet bulb temperature difference between two points at different height is descr and its schematic circuit diagram presented. Formulas are developed to adjust galvanom readings to yield values of humidity gradient. Results of an experimental verificatio presented. *Subject Headings:* **1. Humidity instruments 2. Humidity lapse rate.**—*G.T.*

5.9–58 551.508.71:551

Great Britain. National Physical Laboratory, **Measurement of humidity.** *Britain. Dept. of Scientific and Industrial Research, Notes on Applied Science*, No. 4, 4+18 p. 6 figs., table, 15 refs. **GB-MO**—Describes physical principles and types o grometers. These illustrated by diagrams, are wet and dry bulb, dew point instrum

chanical (hair hygrometer etc.), gravimetric, and electrical resistance. Sources of error listed and a humidity box for testing described. *Subject Heading:* **1. Hygrometers.**—*E.P.B.*

5.9–59 551.508.71

Janiszewski, Feliks, **O wlasciwa obsluge termometru zwilzonego.** [On the proper care wet bulb thermometers.] *Gazeta Obserwatora PIHM*, 4(9):13–14, Sept. **1951. DLC**—dispensable rules and regulations for appropriate care and correct measurement with wet lb thermometers are given. *Subject Heading:* **1. Wet bulb thermometers.**—*A.M.P.*

5.9–60 551.508.17

Kawata, Suekichi and Omori, Yoshiro (*Fac. of Engr., Kyoto Univ.*), **Investigation of rmocouple psychrometer, I.** *Physical Society of Japan, Tokyo, Journal*, 8(6):768–775, v./Dec. **1953.** 10 figs., 5 refs., 10 eqs. **DWB**—Properties and use of thermocouple psyometers consisting of fine wires of constantan and manganin have been studied. In Part arious effects on psychrometric measurements have been examined experimentally such as nsfer of heat through wires and also through air between dry- and wet-junctions, ventilation, of indication, and conditions have been shown to avoid misleading causes. The thermoıple psychrometer is of rapid response owing to its small thermal capacity, and its wetıction is cooled sufficiently by slight ventilation mostly due to its small size which makes ect of radiation on wet-junction small. *Subject Heading:* **1. Thermocouple psychrometers.**—*thors' abstract.*

5.9–61 551.508.71:551.571.7

Schulze, Werner, **Zur Feuchtemessung in der freien Atmosphäre mit dem gewalzten ar.** [Humidity measurement in the free atmosphere with the rolled hair.] *Annalen der teorologie*, 5(7–12):223–226, **1952.** 3 figs., 2 refs. **MH-BH**—Continuation of paper in *nalen der Meteorologie*, 5:35–45, 1952 (*see item* 4.11–63, Nov. 1953, *MAB*). Specimen ıperature and R.H. profiles up to 19 km or 250 mb are shown. *Subject Headings:* **1. Hymetry 2. Upper air humidity.**—*C.E.P.B.*

5.9–62 551.508.72

Glubshev, K. S., **Isparitel' s vodnoĭ poverkhnosti risovykh chekov.** [Evaporimeter for water surface of rice paddies.] *Gidrotekhnika i Melioratsiia*, Moscow, No. 4:70–73, **1952.** igs. **DLC**—Description of a simple portable evaporimeter, giving directly the height of ıporated water on a scale (1:25) which is connected with a float. Claimed accuracy 0.5 mm. *bject Headings:* **1. Evaporimeters 2. Rice paddies.**—*A.A.*

5.9–63 551.508.72

Mihara, Y., Yabuki, K. and Uchijima, Z. (*Nat. Inst. of Agri. Sciences, Tokyo*), **On the ferential evaporation recorder.** *Journal of Agricultural Meteorology*, 7(3/4):137–139, **v. 1952.** 3 figs. In Japanese; English summary p. 139. **MH-BH**—The amount of ıporation in a large size evaporation pan is measured by reading the level of the water face on a differential evaporation recorder with which the change in level owing to temature variation is eliminated and only that owing to evaporation is recorded. The inument consists of two floats, a differential mechanism with a pair of pulleys and a string, l a tapping recorder. The instrument can record the amount of evaporation with an curacy of 0.1 mm. An example of the records is shown in a photograph, from which calated intensity of evaporation is illustrated with the diurnal variation of other weather tors. *Subject Headings:* **1. Evaporation instruments 2. Evaporation measurement.**—*om authors' abstract.*

5.9–64 551.508.72

Sutton, L. J., **Fluctuations of evaporation.** *Weather*, 7(5):155, May **1952. DWB**—iticizes use of Piché figures as measures of evaporation from free surfaces. *Subject Heading:* **Evaporimeters.**—*C.E.P.B.*

5.9–65 551.50

Uhlig, Siegfried, **The Popoff evaporimeter.** *Weather*, 8(1):9–10, Jan. **1953.** fig., 3 r
MH-BH—Description of an instrument in use in Germany for measuring evaporation f
bare soil as difference between total loss of water and percolation water. Amounts are fo
by weighing removable columns of soil. *Subject Heading:* **1. Popov's soil evaporimete**
C.E.P.B.

5.9–66 551.50

Weise, Rudolf, **Über ein einfaches Hilfsmittel zum Taunachweis und seine praktisc
Anwendungsmöglichkeiten.** [On a simple apparatus for observing dew and its pract
applications.] *Annalen der Meteorologie*, 5(7/12):378–381, **1952.** German and Eng
summaries p. 378. Discussion p. 381. **MH-BH**—Blank paper is sensitized by powder gro
from an indelible pencil, and a roll of it is exposed horizontally. Dew leaves permanent tra
which can be graduated on a scale of 0–3. *Subject Heading:* **1. Drosometers.**—*C.E.P.B.*

5.9–67 551.508.76:551.507.352:551.5

Fraser, D. (*Low Temp. Lab. Ottawa, Canada*), **Airborne cloud measurements.** U
Air Force Cambridge Research Center, Geophysical Research Papers, No. 13:109–116, May 1
2 figs. Discussion, p. 113–116. **DWB**—Techniques of temperature measurement,
tography of cloud droplets and measurement of free water content are described. T
techniques are applied in flight by the Low Temperature Laboratory of the Canadian Nati
Research Council with the primary purpose of investigating icing hazards, particular
supercooled clouds at temperatures ranging down to −50°C. Schematic diagrams of
borne thermometer housing and of cloud droplet camera are presented. *Subject Head*
1. Airplane weather reconnaissance 2. Cloud meters 3. Icing research.—*G.T.*

5.9–68 551.508.76:551.5

Keily, D. P., **Measurement of drop size distribution and liquid water content of na
clouds.** Massachusetts Institute of Technology, Contract AF 19(122)-245, Quarterly Prc
Report No. 5, Aug. 31, **1951.** 6 p. 3 refs. **DWB**—Work during this period indicated
the measurement of size of aerosol particles by photographic observations of these par
(water drops) in a sonic field was not practicable in air streams of 200 mph (as in m
aircraft). A chamber for creating fogs to be used in testing drop size and liquid water co
instruments was being constructed. Chart shows computed amplitude ratio vs drop pa
size for sonic excitation frequency. *Subject Headings:* **1. Drop size measurement 2. L
water content meters 3. Sonic excitation of aerosols. I. Contract AF 19(122)-245 II.
sachusetts Institute of Technology.**—*M.R.*

5.9–69 551.508.76 551

Kuroiwa, Daisuke and Kinoshita, Seiiti, **A balloon fog meter and the vertical distrib
of liquid water contents in lower atmosphere.** (In: Sapporo, Japan. Hokkaido
Institute of Low Temperature Science, **Studies on fogs in relation to fog-preventing f
1953.** p. 187–204. 12 figs., 2 refs., 7 eqs.) **MH-BH**—The authors devised a new "b
fog meter"—a fog meter carried by a balloon—for measuring water content at any heig
to ca. 250 m from the ground. The instrument consists of a fog collector and an auto
recording device coupled with a anemometer. The collector, the main part of which co
of a large number of fine stretched wires, captures the fog particles and leads them
recording device in the form of droplets. For automatic recording either an electric c
or a moving paper tape was used. The vertical distribution of fog water content sho
logarithmic increase with increasing height. From the observed distribution it was
by the aid of the theory of turbulent diffusion near the ground, that the amount of fog ca
by 1 cm² of the ground surface in one second was about 0.57×10^{-6} g. *Subject Hea*
1. Balloon fog meters 2. Advection sea fog 3. Water content of fog.—*Authors' abstra*

5.9–70 551

Matsumura, Nobuo, **On the calibration of a fog meter.** (In: Sapporo, Japan. Ho
University. Institute of Low Temperature Science, **Studies on fogs in relation to fog-pr**

forest. 1953. p. 175–186. 8 figs., 4 refs., 13 eqs.) **MH-BH**—The procedure for calibrating the fog meter described by T. TABATA, T. HUZIOKA, N. MATSUMURA (*see* 5.9–71 below) involves the determination of its capturing coefficient. Since the nonuniformity of the wind influences the capturing coefficient, wind, turbulence or the fluctuations of the horizontal and vertical components of wind velocity must be considered. The fog meter and the calibration equipment are described. Semi-empirical equations in which both the effect of the horizontal and vertical components of wind velocity are taken into account are derived for determining the capturing coefficient. *Subject Headings:* **1. Fog meters 2. Instrument calibration.**—*I.L.D.*

5.9–71 551.508.76

Tabata, Tadashi; Huzioka, Tosio and Matsumura, Nobuo, **On a recording fog meter.** : Sapporo, Japan. Hokkaido University. Institute of Low Temperature Science, **Studies fogs in relation to fog-preventing forest. 1953.** p. 169–173. 3 figs., 2 refs.) **MH-BH**— e author describes an automatic fog meter in which fog particles carried by wind are cap- ed by a cylindrical wire screen and the collected fog water is allowed to fall as droplets. e number of droplets is recorded on the paper of RICHARD's chronograph which is ually employed in connection with ROBINSON's cup anemometer, and a measure of the ount of fog water captured is obtained. The fog water content in unit volume of foggy is measured by modifying ROBINSON's cup anemometer so it is capable of sending electric ses at intervals of 1000 m wind run. *Subject Heading:* **1. Fog meters.**—*I.L.D.*

5.9–72 551.508.765

Blanchard, Duncan C. (*Woods Hole Ocean. Inst., Mass.*), **A simple recording technique determining raindrop size and time of occurrence of rain showers.** *American Geophysical ion, Transactions*, 34(4):534–538, Aug. **1953.** 2 figs., table, ref. **MH-BH**—Time of urrence and duration of rains are recorded by a moving paper tape, treated with water- uble methylene blue. Spot diameters can be related to raindrop size by laboratory cali- tion. A test was made on the Oahu Island, where 119 rains were recorded comparing h 40 by nearby recording raingages. Sample records are shown. *Subject Headings:* **Raindrop recorders 2. Oahu, Hawaiian Islands.**—*A.A.*

5.9–73 551.508.765

English Electric Co., Ltd. **The Napier cloud droplet sampling apparatus.** *English ctrical Journal*, Stafford, 12(9):23–27, **1952.** 6 figs. **MH-BH**—Describes an air-borne paratus for sampling and photographing droplet sizes in a spray directed on an aircraft to ulate icing conditions in flight. A special spray nozzle has been designed to simulate ud conditions. *Subject Headings:* **1. Drop size distribution instruments.**—*C.E.P.B.*

5.9–74 551.508.765 551.574.1 551.575.1:551.521.32

Kamiyama, K. and Moriguchi, M., **Collection of fog particles with fine fibre and infra-red sorption of fog particles.** *Papers in Meteorology and Geophysics*, Tokyo, 3(2):104–114, g. **1952.** 11 figs., 5 tables, 13 refs. **MH-BH**—A method for capturing fog particles with bre of artificial resin (99.7% Methyl Methacrylate and 0.3% Benzol Peroxide) is described. is method was applied in June 1951 on the southeast coast of Hokkaido, Japan. Number particles captured is tabulated and curves of their size distribution are presented. The ort includes studies of the evaporation of fog particles (relation between evaporation and ius of droplet is determined), and on infrared absorption (optical system and amplifier d are described and illustrated). Among other conclusions the authors find that the number fog particles decreases behind a forest. The infrared absorption coefficient is estimated 1.4%. *Subject Headings:* **1. Drop size distribution instruments 2. Fog 3. Infrared sorption 4. Japan.**—*G.T.*

5.9–75 551.508.765:551.578.11

Mason, B. J. and Ramanadham, R., **A photoelectric raindrop spectrometer.** *Royal eorological Society, Quarterly Journal*, 79(342):490–495, Oct. **1953.** 5 figs., 10 refs. **DWB**

An instrument is described in which raindrops fall through a parallel rectangular beam the light scattered at an angle of 20° is focused on a photomultiplier cell. Each drop proc a voltage pulse of amplitude nearly proportional to its cross section. These pulses are s by electronic circuits into 8 different size groups and the number in each group is reco continuously. Wiring diagram is given and calibration described. Some specimen re are shown; they agree closely with the distribution law of J. S. MARSHALL and W. M. PAL $N_d = N_o e^{-xd}$. *Subject Heading:* **1. Drop size distribution instruments.**—*C.E.P.B.*

5.9–76 551.508

Massachusetts Institute of Technology. Dept. of Meteorology. Weather R Research, **The disdrometer, an instrument for measuring the distribution of raindrop encountered in flight.** Contract W36-039-sc-32038, Project DA 3-99-05-022, Projec 12213-0, Technical Report No. 13, June 1, **1951.** 28 p. photos, graphs, diagrs., char refs. **DWB**—Since 1946 a great deal of time and effort have been spent in developin accurate instrument for measuring raindrop size distributions in flight, and inciden for determining the liquid water content of clouds. Results have not been very satisfacto respect to the latter, as recorded H_2O contents have usually proven too high compar other methods such as capillary collectors. Two possible explanations are given fo consistent bias: 1) the disdrometer records too narrow a range of drop size and 2) the are possibly distorted due to acceleration while entering the recorder at high speed and the instrument records the area (i.e., the time spot by the drop in a light beam) of the a distortion would give too large a value for drop size. The report covers all phases o subject: various methods of measurement of drop sizes, history of development of disdro construction circuits, calibration, installation, operation before, during and after flight, an of data, etc. A thesis by L. F. VASSAMILLET covering the evaluations of data and an and interpretation of errors is appended. It is concluded that since drop size distrib varies rapidly in a small distance (several meters) it would be better to develop simpler d such as momentum transfer detectors having a wide range of collecting areas to cover a range of drop sizes rather than continue the development of this photoelectric method. *S Headings:* **1. Disdrometers 2. Drop size distribution instruments 3. Liquid water cont clouds 4. Air-borne instruments. I. Contract W36-039-sc-32038 II. Bemis, Al III. Vassamillet, Lawrence François IV. Wilson, George A. V. Williams, Edwin L. VI lace, Bernice A. VII. Mazzuchelli, S. A. VIII. Katz, Robert E. IX. Foster, Hal E. X. ingham, Robert M. XI. Brodie, Arthur N. XII. Bean, Edward, Sr. XIII. Bean, Ba** —*M.R.*

5.9–77 551.5

Der Regenbildschreiber. [Autographic raindrop recorder.] *Umschau*, 54(12 June 15, **1954.** 3 figs. **DWB**—Describes a new form of the W. Lambrecht raindrop re of great precision. *Subject Heading:* **1. Drop size distribution instruments.**—*C.E.P.B.*

5.9–78 551.508.765:551.

Smulowicz, Bronislaw, **Analysis of the impactometer, an instrument for measuri distribution of raindrop sizes encountered in flight.** Massachusetts Institute of Techn Dept. of Meteorology. Weather Radar Research, Contract DA-36-029-sc-124, Te Report, No. 19, May 16, **1952.** 44 p. 15 figs., 6 refs., 32 eqs. **DWB**—Advantages impactometer described in the report are: 1) insensitivity to aircraft vibration and d pressure variation; 2) ease in calibration using solid particles of known momentum, oretically; 3) cheapness, ruggedness and simplicity; 4) output directly proportio momentum of raindrop. However, range is limited by recovery time so 2 instrument be used to cover range from 500 to 5000μ diameter. Most of the report deals with a the analysis of the dynamics of the instrument and of the electrical analogue of the blunt c used in the instrument. Response is independent of position of impact on sampling s *Subject Headings:* **1. Raindrop size distribution instruments 2. Airborne meters pactometers. I. Massachusetts Institute of Technology. Dept. of Meteorology. W Radar Research II. Contract DA-36-029-sc-124.**—*M.R.*

SYNOPTIC ANALYSIS AND FORECASTING

See also: **Outbreak of cold wave and its forecasting** (Yasui), 5.9–199; **Forecast of fog occurrence** (Ibaragi), 5.9–222; **Analytical foundations of climatology** (Thom), 5.9–263; **Below-min. terminal condit. at Nelson** (Browne), 5.9–302.

5.9–79 551.509.318

§Hess, Paul and Brezowsky, Helmuth, **Katalog der Grosswetterlagen Europas.** [Catalog f large scale weather conditions in Europe.] Translated by U. S. Air Force. 2058th Air Veather Wing, [1952?] 27 p. 2 tables, numerous charts (some fold.). Original in: *Germany. Deutscher Wetterdienst in der US-Zone, Berichte,* No. 33, **1952. DWB**—English ranslation of text: tables and figures reproduced "as is." For original *see item* 5.2–284,)ct. 1952, *MAB. Subject Headings:* **1. Weather types 2. Circulation types 3. Synoptic atalogs 4. Translations.**—*M.R.*

5.9–80 551.509.318:551.524.36(521.6)

Kato, H., **Quantitative forecasting in Tokai District.** *Journal of Meteorological Research,* Tokyo, 4(12):981–984, March **1953.** 7 figs., table, ref. In Japanese; English summary . 60–61. **MH-BH**—A statistical method of forecasting maximum and minimum air temerature is described, based on weather, vapor pressure and wind velocity. Corrections are ıtroduced for change of weather type and cloudiness. Standard deviation of error of forecast .9°C. *Subject Headings:* **1. Statistical forecasting 2. Forecasting temperature extremes . Japan.**—*C.E.P.B.*

5.9–81 551.509.33

Leight, Walter G. (*U. S. W. B., Wash., D. C.*), **The use of probability statements in xtended forecasting.** *Monthly Weather Review,* 81(11):349–356, Nov. 1953. 8 figs., 2 ables, 17 refs. **MH-BH**—The need for qualification of weather forecasts has long been ecognized. The diverse uses of predictions and variations in the forecaster's ability to rognosticate weather events correctly have suggested to previous writers that expressions f confidence or other means of weighing can serve the public to advantage. A particular ıethod of expressing and scoring 5-day temperature forecasts in terms of probability statements as been tried experimentally by the U. S. Weather Bureau's Extended Forecast Section nd found to provide valuable information in addition to that normally furnished. Furtherıore, it is demonstrated that the participants in the experiment possess definite skill in selecting robability statements, and that relative verification results are comparable to those obtained y scoring the conventional forecasts. *Subject Headings:* **1. Extended forecasting 2. Probbilities.**—*Author's abstract.*

5.9–82 551.509.33

Massachusetts Institute of Technology, **Extended Forecasting Project.** Contract Cwb-1142, Progress Report, July 1–Dec. 31, 1951. 13 p. Also its Contract Cwb 8309, Progress Report for the period, July 1–Dec. 31, 1952, Jan. 1, 1953. 14 p.—and Final Report for the eriod July 1, 1952–June 30, **1953.** 20 p. 2 charts. Typescript. **DWB**—Administrative eport on research activity (analysis of synoptic world weather data, computation of pressure rofiles, circulation indexes, correlation coefficients, solar-terrestrial relationships, etc. for the urrent material 1949–50 and partly also on the basis of the Historical Weather Maps, 1899–933). A number of sea surface indexes (ice conditions and water temperature for different eas) and climatic indexes were selected (mostly temperature and rainfall departures). *Subject Headings:* **1. Extended forecasting 2. World climate 3. General circulation 3. Solarerrestrial relationships. I. Contract Cwb-8142 II. Contract Cwb-8309 III. Willett, Hurd C.** —*A.A.*

5.9–83 551.509.33:519.241

*Morton, William C., III, **Long range forecasting of precipitation and temperature anomlies by use of contingency tables.** Weather Services, Inc., Boston, Contract AF 19(604)-49, Scientific Report, No. 1, [1954?] 12 p. 10 figs. (tables), refs. **MH-BH**—Monthly alues of temperature and precipitation in Southern New England, 1896–1950 were divided

into 5 classes and contingency tables were constructed showing frequency in each class followi similar classes one and two months earlier for each of 15 other areas in U. S. From these t 8 best "predictors" were selected. Tests on random data and forecasts of independent valu (1951–52) showed, however, that this method is unlikely to be of value in forecasting. U of two month sequences gave no improvement. *Subject Headings:* **1. Long range forecasti 2. Statistical analysis. I. Weather Services, Inc., Boston II. Contract AF 19(604)-449.** *C.E.P.B.*

5.9–84 551.509.58:551.586:633

Frisby, E. M., **Weather-crop relationships: forecasting spring-wheat yield in the northe Great Plains of the United States.** *Institute of British Geographers, Publication,* 17:79–9 **1952.** 15 figs., 2 tables, refs. **DLC**—Physical characteristics of Montana, N. and S. Dako and western Minnesota are described, with maps of soils, average annual maximum te perature, precipitation and frost-free period, and average spring wheat yield. Moisture w best represented by THORNTHWAITE's potential evapotranspiration. A yield-forecasti technique was developed involving six factors (temperature, precipitation, effective moistu taken in pairs and a series of graphs. Error only about 2 bushels per acre. *Subject Headin* **1. Crop yield forecasting 2. Great Plains, United States.**—*C.E.P.B.*

5.9–85 551.509.58:551.57

Gay, Robert W. (*Bureau of Reclamation, Boise*), **Forecasting spring floods.** *The R lamation Era,* Washington, D. C., 38(3):49–51, March 1952. illus. **DWB**—The cooperati of various government agencies in obtaining snow and runoff data and preparing water supp forecasts in the Columbia River basin, is described in popular terms and illustrated on pho showing observers in action and some hydrological aspects of the region. *Subject Headin* **1. Flood forecasting 2. Spring floods 3. Water supply forecasting 4. Runoff 5. Columb River basin.**—*G.T.*

5.9–86 551.509.58:632.1

McCarthy, Keith R., **Fire weather ahead.** *American Forests,* Washington, D. C., 59 10–12, 40–41, July **1953.** photos., diagr. **DWB**—The service performed by the U. S. Weat Bureau's Fire Weather Service especially in the Pacific Northwest, is outlined. The type service include: a) daily forecasts of dangerous fire conditions for specific areas, distributed radio and wire, b) long range (2–30 day) forecasts or outlooks to allow for planning of fighting and logging operations and c) spot coverage of actual fires with mobile weather u giving advice to the crews of wind shifts, etc., which might alter the tactics or save manpo or even lives. *Subject Headings:* **1. Fire weather services 2. Fire weather forecas 3. Pacific Northwest.**—*M.R.*

5.9–87 551.509.58:551.510

Minnis, C. M., **Ionospheric storm-warning services. Assessment of their value.** *W less Engineer,* 30(5):103–108, May **1953.** fig., 9 tables, 7 eqs. **DLC**—A statistical meth described for checking accuracy of forecasts of "stormy" conditions on radio circuits w depend on ionospheric propagation. The economic value of such forecasts, and proce when no forecast is available, are discussed. *Subject Heading:* **1. Ionospheric storm forecas** *C.E.P.B.*

5.9–88 551.509.58:621

Rogers, D. H. (*A. V. Roe, Canada, Ltd.*), **Meteorological aspects of the flight te of jet aircraft.** *Royal Meteorological Society, Canadian Branch,* [Publications], 3(2): **1952. DWB**—The effects of meteorological phenomena, especially wind, turbulence, cl ness and icing, on jet aircraft in "performance testing flights" and "proving and safety fli are discussed. Clouds which were found at altitudes of 40,000 feet with the tops still con ably higher, are mentioned. Two types of weather forecasts are required, according to au one determining the practicability of test flights on the following day and the other predi landing conditions for jet aircraft within 20–45 minutes. *Subject Headings:* **1. Jet ai 2. Weather effects 3. Test flight forecasts.**—*G.T.*

5.9–89 551.509.62:551.524.37:632.1

Rogers, W. S., **Some aspects of spring frost damage to fruit and its control.** *Royal rticultural Society, Journal*, 79(1):29–36, Jan. **1954.** 11 figs., 22 refs. **GB-MO**—During liation frosts blossom temperatures are 1–2°F lower than screen minima. Frost damage urs when ice forms in the tissues, about 28°F, and widespread damage at 25–26°F. Dry nts suffer less than wet. Best protection is to avoid frost by using late blooming varieties, ining, screening and keeping ground clear and grass short. Water sprinkling as a palliative raise temperature by 3.5°F at 2 mm/hr to 8°F at 6 mm/hr (wind 2 mi/hr). Practical nts are discussed. *Subject Headings:* **1. Frost damage 2. Frost protection.**—*C.E.P.B.*

CLOUD SEEDING

See also: **Physical basis of water supply for U. S.** (Reichelderfer), 5.9–257.

5.9–90 551.509.67

†Albani, Felix (*Argentine Nat. Met. Ser.*), **La modificación artificial de la precipitación.** rtificial modification of precipitation.] *Meteoros*, Buenos Aires, 3(2/3):247–275, April/ pt. **1953.** 82 refs. English summary p. 247. **DWB**—A comprehensive and critical review the theoretical basis underlying the attempts to increase precipitation by cloud seeding and lescription of the various attempts (both commercial and governmental) of cloud seeding ade in different parts of the world to increase rainfall by different methods of cloud seeding. ie author concludes that precipitation can be increased artificially under special climatic nditions as demonstrated by Canadian and Australian experiments. *Subject Headings:* **Cloud seeding 2. Artificial precipitation.**—*I.L.D.*

5.9–91 551.509.67

Beaumont, R. T. (*Oregon Agric. Exp. Station, Medford, Ore.*), **Cloud-seeding analysis in egon.** *American Meteorological Society, Bulletin*, 34(7):298–303, Sept. **1953.** 12 figs., tables, 5 refs. **MH-BH**—Attempts by commercial cloud seeding operators to increase ecipitation in the form of snow in the Southern Oregon Cascades during the winter months d precipitation in the Tri-Counties area of Oregon for a ten month period are evaluated comparing a target and central area. A statistical analysis of the data involving the use of gression curves between control and target area failed to show a material increase of pre- itation in the target areas through cloud seeding. The decrease in the total accumulative owfall for two counties in the Southern Oregon Cascades is cited as the strongest evidence and in these analyses of a possible modification of precipitation that could be attributed to oud seeding. *Subject Headings:* **1. Cloud seeding 2. Cloud seeding evaluation 3. Oregon.** *I.L.D.*

STRUCTURE AND PHYSICS OF THE ATMOSPHERE

STRUCTURE OF THE ATMOSPHERE

See also: **Sodium, upper atmos.** (Miller), 5.9–7; **Intern. Symposium of Atmos. Ozone** (I.U.G.G.), 5.9–110.

5.9–92 551.510:551.507.362

***Druck, Dichte und Temperatur der Erdatmosphäre bis zu 160 km Höhe.** [Pressure, nsity and temperature of the earth's atmosphere up to 160 km altitude.] *Sternenwelt*, unich, 4(9/10):186, **1952. DLC**—A table extracted from Havens, Koll and LaGow's port in *Journal of Geophysical Research*, 57(59), 1952, gives pressure, density and temperature A) at 0, 20, 40, 60, 80, 100, 120, 140 and 160 km. height. Brief review of report. *Subject eadings:* **1. Atmospheric structure 2. Rocket data.**—*M.R.*

5.9–93 551.510.3:629.13

Prommel, Harold H., **Operational altitude.** *Flying*, Chicago, 53(3):30–31, 57, Sept. **53.** charts. **DWB**—Two nomograms are presented for determining operational altitude

from density altitude and temperature (°F or °C), and for measuring the effects of operat altitude in terms of decreased flight performance (increased runway distance or decre rate of climb involved when specific airport temperature, or pressure altitude are kn *Subject Headings:* **1. Altimeter corrections 2. Air density effects 3. Airplane perform 4. Nomograms 5. Aeronautical meteorology.**—*M.R.*

5.9–94 551.510.4:551.586:551.

Georgii, Hans-Walter, **Untersuchung über den Luftaustausch zwischen Wohnräu und Aussenluft.** [Investigation of the exchange of air between occupied rooms and air.] *Archiv für Meteorologie, Geophysik un Bioklimatologie, Ser. B*, 5(2):191–214, 7 figs., 4 tables, 17 refs. German, English and French summaries p. 191. **DLC**— summarizing literature author describes investigations in a second story room in Fran a.M. (2 outside brick walls, wood floor); CO_2 and aerosols ($CaCl_2$) were introduced and of decrease measured. Volume of air exchanged shown by CO_2 increased with wind vel $(a+bV^2)$ from 2½ ltr/s with calm air to 10 with wind 7 m/s, that shown by aerosol fro to 6; difference due to ventilation through wall pores (CO_2 only) and cracks (both). direction had little effect. A similar room with linoleum floor had much smaller exc coefficient. No connection was found with indoor-outdoor temperature difference but cellar exchange coefficient increased linearly with temperature difference. *Subject Hea* **1. Room ventilation.**—*C.E.P.B.*

5.9–95 551.510.41:54

Apel', L. S. and Apel', IA. A., **K metodike opredeleniîa dvuokisi i okisi ugleroda w dukhe.** [Method of determining the content of carbon dioxide and carbon monoxide i air.] *Gigiena i Sanitariîa*, Moscow, No. 11:50–52, Nov. **1953.** 2 figs. **DLC**—A contains diagrams of the arrangement of the apparatus for providing an uninterrupte of air free from CO_2 during the determination of CO_2 and of the CO content of air, respect *Subject Headings:* **1. Carbon dioxide in the atmosphere 2. Carbon monoxide in the atmos 3. Atmospheric pollution instruments.**—*I.L.D.*

ATMOSPHERIC POLLUTION

See also: **Smog** (Gr.Br. R.M.S.), 5.9–4.

5.9–96 551.510.42:551.581:6

Hudson, J. C. and Stanners, J. F., **The effect of climate and atmospheric pollut corrosion.** *Journal of Applied Chemistry*, 3:86–96, **1953.** 4 figs., 13 tables, 3 refs. **D** Corrosion tests were made by exposing ingot iron, zinc and copper steel for a year at a nu of places over the world. In Britain rate of corrosion of iron and zinc is almost di proportional to amount of SO_2 in the air. With no SO_2 corrosion in dry climates is neg but it is very great on surf beaches in the tropics. A few tenths of 1% copper in steel de rate of corrosion by 10%–40%. *Subject Headings:* **1. Corrosion of metals 2. Atmos pollution effects 3. Sulphur dioxide.**—*C.E.P.B.*

5.9–97 551.

Irving, R. J., **Tests on some impurities in the atmosphere of Leeds.** *Leeds Philoso and Literary Society, Scientific Section, Proceedings*, 6(1):14–17, **1952.** 3 figs., table, **DLC**—Hourly measurements of dust and SO_2 were made on a clear sunny day and a day in Leeds. In outside air in fog there was 25 times as much dust as on a clear da was: clear 0.05, fog 1.95 p.p.m. Maxima were about 10 a.m. and 6 p.m., main mi midnight to 5 a.m. In a room not air conditioned results were similar, but filtering gauze removed nearly all dust and SO_2. At Sheffield NO_2 was about 0.7 p.p.m. *Headings:* **1. Atmospheric pollution 2. Leeds, England.**—*C.E.P.B.*

5.9–98 551.510.42:5

†*Katz, Morris, **Application of diffusion theory to dispersion of stack gas in the atmos** *Canada. Defence Research Board. Defence Research Chemical Laboratories, Report N*

ept. 1952. 35 p. 9 tables, 23 refs., eqs. Mimeog. **DWB**—Data on concentration of SO_2 t various distances downwind from the Trail, B.C., smelter under different atmospheric onditions, and of dispersion of SO_2 fumes at distances of 18.5 to 58 miles from Copper Cliff,)ntario (Sudbury District), are analyzed and used to test the Bosanquet-Pearson and the utton diffusion equations. The latter gives the best correlation between observed and omputed values. Even so, the concentration of gases at distances 6 miles from Trail, B. C., re often 4 to 5 times the theoretical maximum. Reasons are suggested for this discrepancy. he history of the subject, the theory and methods of observations and extensive tables of ata are included. *Subject Headings:* **1. Turbulent diffusion 2. Stack effluents 3. Dis-ersion equations 4. Atmospheric pollution 5. Turbulence effects 6. Trail, B. C. 7. Sud-ury, Ontario.**—*M.R.*

5.9–99 551.510.42:551.575.5:628.53

London, County Council. Rivers and Drainage Committee, **Statement of evidence to he Committee of Inquiry on Air Pollution. The London fogs of December 1952.** Reprint rom its *Report*, 1953-2–10, Nov. 17, **1953. GB-MO**—Increase of death rate from Nov. 16, 952 to Jan. 10, 1953, is analyzed and compared with those of fog of 1873, and epidemics of holera in 1866 and influenza 1918. Present preventive measures against atmospheric pollu-ion and previous investigations are summarized. Suggestions are made for strengthening xisting law and for publicity. *Subject Headings:* **1. Smog 2. Smoke abatement 3. Great ondon fog—1952.**—*C.E.P.B.*

5.9–100 551.510.42:551.574.1

†Ludlam, F. H., **Atmospheric aerosol.** *Science Progress*, 42(165):65–75, Jan. **1954.** fig., 0 refs. **DLC**—Discussion mainly of work of C. JUNGE (1952–53) on size and constitution of erosols. Classified into Aitken nuclei <0.1 micron radius, large nuclei, 0.1–1 and giant uclei 1–20 micron. Predominant component of large nuclei at Zugspitze, and at Frankfurt n oceanic air, ammonium sulphate; of giant nuclei, sea salt. Trace substances in rain water re discussed. Sources of substance in aerosol and rain are considered: chlorine from sea and ocally from industry; sulphate from industry, volcanoes and organic material; ammonia from res and possibly from atmospheric nitrogen and water by photochemical reaction. *Subject Headings:* **1. Atmospheric pollution 2. Aerosols. I. Junge, C.**—*C.E.P.B.*

5.9–101 551.510.42

Meetham, A. R., **Natural removal of atmospheric pollution during fog.** *Royal Meteoro-ogical Society, Quarterly Journal*, 80(343):96–99, Jan. **1954.** table, 4 refs. **DWB**—The verage life of smoke particles and SO_2 molecules over land in Britain are calculated as: smoke 8 hr, SO_2 $8\frac{3}{4}$ hr. In the London fog of Dec. 1952 observed concentrations (2.2 mg/m³ smoke, .1 mg/m³ SO_2) were much less than if all emitted has accumulated, and average life is cal-ulated as: smoke 13 hr, SO_2 6 hr. The causes of shorter life in fog are discussed and found o be complex. *Subject Headings:* **1. Atmospheric pollution 2. Great London fog—1952 . Smog.**—*C.E.P.B.*

5.9–102 551.510.42:632.1

Metcalfe, C. R., **Effects of atmospheric pollution on vegetation.** *Nature*, London, 72(4380):659–661, Oct. 10; **1953. DWB**—Report on discussion at British Association. C. R. METCALFE described damage to evergreens at Kew by toxic substance in fog, especially SO_2 combined with high temperature and humidity. T. R. PEACE spoke of damage by fluorine. J. K. C. BLEASDALE described experiments showing effect of SO_2 concentrations of 0.01–0.06 p.p. million in winter. *Subject Headings:* **1. Atmospheric pollution 2. Plant damage. . Peace, T. R. II. Bleasdale, J. K. C.**—*C.E.P.B.*

5.9–103 551.510.42

Neuberger, Hans (*Penna. State Univ.*), **The vertical distribution of atmospheric properties nd air pollution.** *Air Repair*, Pittsburgh, 3(3):205–210, Feb. **1954.** 10 figs., 9 refs. **DWB**—After a general discussion of vertical mixing and of temperature lapse rate and their effect on he distribution of air pollutants, the author suggests that continuous records of the atmospheric

electric potential gradient would be much better indicators of the degree of atmosphe pollution than visibility or sunshine-duration records. This assertion is based on the fact th high potential gradient means low conductivity and that atmospheric conductivity is invers proportional to the amount of atmospheric pollution. *Subject Headings:* **1. Atmosphe pollution 2. Electrical conductivity of air.**—*G.T.*

5.9–104 551.510.42:539

Schumann, G., **Wie gross ist die künstliche Radioaktivität der Luft?** [How gr is the artificial radioactivity of the air?] *Umschau*, 54(9):267–268, May 1, **1954.** 2 f **DWB**—The half-life of the different products of an atom bomb explosion enables the d of the explosion to be calculated. The concentration of fission products at Königstuhl n Heidelberg rose from nearly zero to 2.5×10^{-12} Curie/m³ on May 14, 1953, following explos on May, but this amount is far too small to have any deleterious effects. *Subject Headin* **1. Radioactivity in the atmosphere 2. Atomic explosions.**—*C.E.P.B.*

5.9–105 551.510.42:613

Sherwood, R. J., **Atmospheric contamination in industry and the health of the worl** *Nature*, London, 173(4414):1078–1079, June 5, **1954. DLC**—Report on conference of Bri Occupational Hygiene Society on April 6, 1954. Papers summarized are: The investigat of atmospheric contaminants in factories, by M. W. Goldblatt and J. C. Gage; The meas ment of dust exposure for the control of pneumoconiosis, by B. M. Wright; and Permiss levels of exposure to ionizing radiations and radioactive materials, by W. G. Marley. *Sub Headings:* **1. Atmospheric pollution 2. Dust. I. Goldblatt, M. W. II. Gage, J. III. Wright, B. M. IV. Marley, W. G.**—*C.E.P.B.*

5.9–106 551.510.42:551.

Smith, Maynard E., **Study of turbulent diffusion by atmospheric eddies.** *New Y Academy of Sciences, Transactions, Ser. II*, 15(4):118, Feb. **1953. DLC**—Summary of pa presented on meeting. Deals with air pollution from stacks and especially, with oil studies conducted at Brookhaven National Laboratory. Vertical temperature struct rather than wind speed, is the most important factor to consider, besides local conditions w require thorough analysis of all factors. *Subject Headings:* **1. Atmospheric pollution 2. T bulent diffusion.**—*A.A.*

5.9–107 551.51

Vorontsova, E. I., **Soveshchanie po metodam opredeleniia zapylennosti vozdu** [Conference on methods for determining the dust content of air.] *Gigiena i Sanita* Moscow, No. 10:54–56, Oct. **1953. DLC**—At this conference which was comprised of mem of various medical and scientific societies interested in hygiene and air pollution, a serie papers were delivered which are briefly summarized. These cover methods of determi dust content of air, comparative trials under static conditions of various types of appar for analyzing dust content, apparatus for the quantitative and qualitative study of atmosp aerosols, etc. *Subject Headings:* **1. Atmospheric pollution 2. Dust content of air.**—*I.L.I.*

UPPER ATMOSPHERE—IONOSPHERE

See also: **Ionospheric storm-warning services** (Minnis), 5.9–87; **Contribution: physics of atmos. to met.** (Vassy), 5.9–211; **Photoionization of molecules** (Inn), 5.9–311.

5.9–108 551.510.53:538

Slichter, L. B., **An electromagnetic interpretation problem for the sphere.** *Royal So of London, Proceedings, Ser. A*, 214(1118):356–370, Sept. 23, **1952.** 10 refs., 93 eqs. **DW** A theoretical study of the properties of an isotropic sphere in free space subject to indu excitation by a variable external force. A reciprocal relation is found between the distribu of magnetic intensity and that of the source currents. The results bear on the elect properties of the high atmosphere. *Subject Headings:* **1. Geomagnetism 2. Atmosp electricity.**—*C.E.P.B.*

5.9–109 551.510.534

Atmospheric ozone and its relation to meteorological conditions. *Meteorological Magazine*, ondon, 83(979):15–20, Jan. **1954. MH-BH**—Critical discussion of K. LANGLO: **"On the mount of ozone and its relation to meteorological conditions,"** *Geofysiska Publikasjoner*, 3(6), 1952. Opened by D. H. MCINTOSH; DOBSON, BREWER, GOLD, HARRISON and others ontributed to a noteworthy survey of ozone problems. *Subject Headings:* **1. Ozone variations. Langlo, K. II. McIntosh, D. H.**—*C.E.P.B.*

5.9–110 551.510.534:06 551.510.41:06

International Symposium on Atmospheric Ozone, Univ. of Oxford, Sept. 2–4, 1952, **roceedings.** *International Union on Geodesy and Geophysics, Bulletin d'Information*, 2(2): 95–322, April **1953. DWB**—Lists members of International Ozone Commission and others ho attended conference proceedings and presents comprehensive abstracts of papers by OBSON, SIR CHARLES NORMAND, R. H. KAY, G. F. WALTON, R. M. GOODY, H. V. DÜTSCH, . W. BREWER and WALSHAW, and discussion at each symposium. The main headings for ie discussion were: 1) Instruments and observation techniques; 2) Vertical distribution of $_3$, 3) photochemical theory of O_3 formation; 4) O_3 and the general circulation of the atmo- here; 5) O_3 and weather changes, and 6) O_3 and stratosphere temperatures. Conclusion as that O_3 variations are associated to a high degree with long-wave pattern of the atmosphere ith ozone high in troughs and low in ridges. Whether advection or vertical motion is the use, is not clear. *Subject Headings:* **1. Ozone layer 2. Ozone conferences 3. I.U.G.G. ternational Ozone Commission.**—*M.R.*

5.9–111 551.510.535:546.17

†*Mitra, A. P., **A tentative model of the equilibrium height distribution of nitric oxide in ie high atmosphere and the resulting D-layer.** *Journal of Atmospheric and Terrestrial hysics*, 5(1):28–43, March **1954.** 12 figs., 3 tables, 50 refs., 17 eqs. **DWB.** Also as: ennsylvania. State College. Ionosphere Research Laboratory, Contract AF 19(122)-44, cientific Report, No. 46, May 15, **1953.** 57 p. **DWB**—Possible photochemical reactions the height range 50–100 km are discussed, involving ozone, nitrogen, oxygen and nitrous xide. The resulting equilibrium distribution of nitric oxide depends on the types of O and $_2O$ distribution assumed. A maximum NO concentration of less than 2×10^{12} cm^{-3} occurs ithin 85–95 km. The D layer can be adequately explained by this process. *Subject Headings:* **. Photoionization 2. Nitric oxide 3. D layer. I. Pennsylvania. State College. Ionosphere esearch Laboratory II. Contract AF 19(122)-44.**—*A.A.*

MECHANICS AND THERMODYNAMICS OF THE ATMOSPHERE

See also: **Spherical vorticity computations** (Dickson), 5.9–34; **Comput. of atmos. oscillation,** 5.9–36; **Meridional eddy flux of energy in atmos.** (Poornachandra, Rama), 5.9–132; **Transmission data for infrared bands of CO_2 and O_3** (Elsasser), 5.9–158; **Energy transfer by infrared bands** (Kaplan), 5.9–160; **Statistical properties at vertical flux . . .** (Panofsky), 5.9–185; **Vertical momentum flux at Brookhaven at 109 meters** (Panofsky), 5.9–186

5.9–112 551.511:551.521

Banerji, S. K. (*Coll. of Engr. and Tech., Jadavpur, Calcutta*), **Efficiency of the atmosphere s a thermodynamic engine.** *Journal of Scientific and Industrial Research*, 12(10):500–502, ct. **1953.** 4 refs. **DWB**—Using the values of effective incoming solar radiation, the energy f circulation and of the dissipation of energy by turbulence, the author calculates the efficiency f the sun's effective heat to be 2.3%, so that 2.3% of the effective incoming solar radiation is sed to maintain the atmospheric circulation. *Subject Headings:* **1. Thermodynamics of the tmosphere 2. Solar radiation.**—*I.L.D.*

5.9–113 551.511 551.524.32(793)

Baum, Werner A., (*Florida State Univ., Dept. of Met.*), **The why of climate.** *U. S. Office f Naval Research, Research Reviews*, p. 7–10, July **1953.** figs. Abstracted from reprint.

DWB—The annual variation of temperature at 2 m above the surface (for Ely, Nevada) computed by integrating the elements of energy balance in a vertical direction (albedo, solation, outgoing heat radiation, conductive and convective heat transport, back radiati from water vapor and clouds, conduction to the ground and evaporative heat (loss). Curv are given for each element and for the overall "climatological" curve and the latter is co pared with the actual observed temperature curve for the year. Consideration of horizon energy exchanges would lead to an even closer approximation. *Subject Headings:* **1. Ener balance 2. Annual temperature variations 3. Climate of Ely, Nevada 4. Ely, Neva I. Gleeson, Thos. A.**—*M.R.*

5.9–114 551.511:551.543.1(252,

§†Bleeker, Wouter, **On the influence of heating and cooling on the surface pressure-fi in the Mediterranean area.** Florida. State Univ. Dept. of Meteorology, Contract 19(122)-466, Scientific Report, No. 3, Nov. 1, **1952.** 18 p. 15 figs., refs. **DWB**—A n phenomenological theory of diurnal variations of differential heating and their influence the pressure field is illustrated by a series of surface pressure maps for the Mediterran region and Middle Europe. A hyperbolic "heating function" causes a zone of divergence the land and convergence on the sea during the day, resulting in a more complicated circulat system then assumed previously. Some remarks on similar processes in the formation thermal lows and highs over the whole continent are made. *Subject Headings:* **1. Diun pressure variations 2. Thermodynamics of the atmosphere 3. Europe 4. Mediterran Area. I. Florida. State University. Dept. of Meteorology II. Contract AF 19(122)-4** —*A.A.*

5.9–115 551.

Bodolai, István, **Az advektív-dinamikus analízis alapelvei.** [The fundamentals advective dynamic analysis. Parts 3, 4.] *Időjárás*, 56(1/4):36–43, Jan./April **1952.** 11 **DLC**—General discussion of the application of the advective-dynamic theory (developed Mikhel', Pogosian, Taborovskii, Kibel and others) to the determination of dyna pressure changes on the basis of thermobaric fields and the mechanism of frontogenesis frontolysis. (For Pt. 5 *see item* 4.10–121, Oct. 1953, *M.A.B.*) *Subject Heading:* **Dynan of the atmosphere.**—*G.T.*

5.9–116 551.511:551

Borushko, I. S., **Opredelenie koefitsienta turbulentnogo peremeshivaniia sposo Ertelia.** [Determination of the coefficient of turbulent mixing by Ertel's method.] *Le grad. Glavnaia Geofizicheskaia Observatoriia, Trudy*, 16(78):106–112, **1949.** 7 figs., 5 r eqs. **DLC**—According to Ertel it is sufficient to observe the horizontal pulsations and vertical gradient of the wind in order to compute the coefficient of turbulent mixing. experimental test of Ertel's relationship based mainly on the standard deviation of the v pulsations and their changes in time was made by means of Albrecht's heat anemom Ertel's formula gives greatly exaggerated values compared with the equation of Ros Budyko and others for all cases of stratification. His hypothesis of the constant horiz momentum during the mixing process is considered to be inadequate. *Subject Head* **1. Exchange coefficient 2. Wind pulsations. I. Ertel, H.**—*A.A.*

5.9–117 551.511

Defrise, Pierre, **Analyse géométrique de la cinématique des milieux continus.** [Geom analysis of the kinematics of continuous media.] *Belgium. Institut Royal Météorolog Publications, Ser. B*, No. 6, **1953.** 62 p. 20 refs., numerous eqs. **DWB**—An elab development of the mathematical theory of space in relation to time as applied to prob of synoptic-dynamic meteorology such as coordinate systems, deformation fields, co calculations and other problems of spherical hydrodynamics. The monograph is divided three major portions: 1) definition of space-time (E.T.), 2) properties of E.T. with (a) tran parallel to the space vectors, (b) in a continuous medium and (c) in a solid medium, ar algebra of E.T. (divergence, coriolis, rotation, etc.) *Subject Headings:* **1. Mechanics o atmosphere 2. Space-time geometry 3. Coordinate systems.**—*M.R.*

5.9–118 551.511:551.551:532.56

Ertel, Hans and Rossby, Carl-Gustaf, **A new conservation-theorem of hydrodynamics.** *physica Pura e Applicata*, 14(3/4):189–193, April/June **1949.** 4 refs., eqs. **MH-BH**—conservation-theorem derived here can be expressed thus: Let $\vec{v}$ be the absolute velocity $\vec{\xi}=\text{curl}\,\vec{v}$ the absolute vorticity, further $\sigma=\sigma(p)$ the specific volume of a barotropic fluid and the gradient of the action W (= HAMILTON's principal-function), then: $\frac{D}{Dt}\left\{\sigma\vec{\xi}(\vec{v}-\nabla W)\right\}=0$, re $\frac{D}{Dt}$ denotes differentiation following the motion of the fluid. *Subject Headings:* **1. Vor-y theory 2. Invariants 3. Hydrodynamics.**—*Author's abstract.*

5.9–119 551.511

Garmendia Iraundegui, José, **Algunas aplicaciones de la teoria de torbellinos.** [Some lications of the vortex theory.] *Revista de Geofisica*, Madrid, 11(44) 328–332, Oct./Dec. **2.** 7 eqs. English summary p. 328. **MH-BH**—Vorticity theorems as proposed by EL and generalized by the author are applied to a fluid medium with electrically charged ticles in order to obtain equations for the magnetic field. *Subject Headings:* **1. Vorticity ory 2. Geomagnetism 3. Ertel's vorticity theorem.**—*A.A.*

5.9–120 551.511

Garmendia Iraundegui, José, **La teoria de torbellinos y los invariantes integrales.** [The ory of vortexes and the integral invariants.] *Revista de Geofisica*, Madrid, 11(44) 333–337, ./Dec. **1952.** 10 eqs. French summary p. 333. **MH-BH**—It is shown that the condition a function A to form a part of an invariant relative linear integral of the equation of move-nt is the same as the condition, imposed on a vector A in order to verify criteria theorems he theory of vortexes. The circulation theorem of the quantity of specific movement ording to V. BJERKNES is derived from the invariant of the relative linear integral according I. POINCARÉ using the method of M. BATEMAN. *Subject Headings:* **1. Vortexes 2. Circula-theorem.**—*Author's abstract.*

5.9–121 551.511 551.521.4

†Gerson, N. C., **Sources of atmospheric and planetary energy.** *Journal of Atmospheric Terrestrial Physics*, 5(1) 67–70, March **1954.** 3 tables, 28 refs. **MH-BH**—Radiation ived by earth from sun, full moon, lightning, skylight, aurora, cosmic rays, meteors and low are calculated in erg/sec and ratio to normal sun; all other sources total only 2.7×10^{-5} gy of sun. Disposition of solar energy is set out. Sources contributing to intensity of nt skylight are reexamined. *Subject Headings:* **1. Energy balance 2. Night airglow.**—*P.B.*

5.9–122 551.511:551.552

Hollmann, G. (*Deutscher Wetterdienst, Hamburg*) and Reuter, H. (*Zentralanstalt für eorologie und Geodynamic, Vienna*), **Ueber die Genauigkeit verschiedener Approximationen horizontalen Windkomponenten.** [The accuracy of different approximations of hori-tal wind components.] *Tellus*, Stockholm, 5(3):403–412, Aug. **1953.** 6 figs., 11 refs., qs. In German; English summary p. 403. **MH-BH**—After a brief theoretical discussion lifferent approximations of the horizontal wind components the accuracy of these ap-ximations is proved with the aid of simple but exact solutions of the hydrodynamic equa-s. In addition to the generally applied geostrophic approximation a second geostrophic roximation proposed by H. PHILIPPS and a stationary approximation suggested by C. G. SBY is dealt with. The theoretical models show that the improvement of higher ap-ximations than the geostrophic depends essentially on the pressure distribution. Moreover statement is derived that in case of stationary nondivergent motion the ageostrophic d components are perpendicular to the isogons, i.e. the lines of equal d, where $tg\ \alpha=v/u$, directed to areas of lower values of the angle α. *Subject Headings:* **1. Wind components Hydrodynamic equations 3. Geostrophic approximation.**—*Authors' abstract.*

5.9–123 551.511:55

Lettau, H. (*A.F. Cambridge Research Center, Mass.*), **On eddy diffusion in shear z** *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers*, No. 19:437- Dec. **1952.** table, eqs. **DWB**—Diffusion from point or line sources cannot be studied ciently by means of the conventional diffusion equation if the air motion has a mean she is the case in the atmospheric surface layer. The turbulence of a shear zone is not perf random. A shearing advection term is introduced, which explains a "striking" par found experimentally by SUTTON; the computed diffusion coefficient seems to increase wit distance from the diffusion source, although the atmospheric state is horizontally uni *Subject Headings:* **1. Horizontal diffusion 2. Shearing zone.**—*A.A.*

5.9–124 551.511:55

†MacCready, Paul B., Jr., **Structure of atmospheric turbulence.** *Journal of Meteor* 10(6):434–449, Dec. **1953.** 10 figs., 3 tables, 34 refs., 33 eqs. **MH-BH**—After a sum of the theory of isotropic turbulence and KOLMOGOROV's similarity hypothesis, experim data from the turbulence research project at California Institute of Technology are se and analyzed. "It is shown that the very simple formulas derived with the aid of K GOROV's Similarity Hypothesis are remarkably consistent with the experimental evi The Similarity Hypothesis, although only directly applicable to turbulent eddies small e to be isotropic, appears in some instance to be useful in its simplest form for atmos problems with scales varying between 1 cm and 1000 km." Some measurements of v turbulent heat flux are described; a systematic variation with elevation was noted. *Headings:* **1. Atmospheric turbulence 2. Turbulent heat flux.**—*C.E.P.B.*

5.9–125 551.511:5

SHCHerbakova, L. F., **O kharakteristike turbulentnogo obmena po mikrokolebani srednemu gradientu skorosti vetra.** [Determination of turbulent exchange by micro tions and mean gradient of wind velocity.] *Leningrad. Glavnaia Geofizicheskaia O toriia, Trudy*, 16(78):102–105, **1949.** 2 refs., 4 eqs. **DLC**—The author develops the fo $K = c\sigma_u^2 \Big/ \frac{\partial u}{\partial z}$ for the computation of the coefficient of exchange, knowing the standard de σ_u of the horizontal wind velocity and the vertical gradient $\partial u/\partial z$ of the mean wind. not assumed that the momentum is constant on the path of mixing, as it was done by in a similar treatment. A difficulty involved is the value of the coefficient c (preli $\frac{1}{2}$–$\frac{1}{6}$), which seems to depend on the stratification. *Subject Headings:* **1. Turbulent ex 2. Wind fluctuations. I. Ertel, H.**—*A.A.*

GENERAL CIRCULATION

See also: **Dynamic effect of Cordillera-Andes and isolation of air perturbations** (Diaz) 5.9–177; **Seasonal variation of upper flow patterns** (Murakami), 5.9–204.

5.9–126 551.513:55

Blumenstock, David I. (*Rutgers Univ.*), **Remarks on "Regional differences in the atmospheric circulation," a paper by John R. Borchert.** *Association of American Geogr Annals*, 93(4):353–356, Dec. **1953.** refs. Reply by John R. Borchert to Blumen remarks. **DWB**—BLUMENSTOCK in his review criticizes the maps on the basis of sign or accuracy of the boundaries drawn by BORCHERT (*see item* 5.1–131, Jan. 1954, *MA* the criteria used to draw them. Prevailing surface winds are said to be poor indic climate over rough terrains or where winds fluctuate considerably from time to tim mass types as shown on Fig. 5 are declared to be innaccurate and the analogs im BORCHERT in his reply acknowledges the roughness of the criteria used, especially a frequencies and analogs, but points out the lack of agreement even among published aut as cited by BLUMENSTOCK. *Subject Headings:* **1. Circulation patterns 2. Climatic 3. Air mass climatology 4. Air mass frequencies. I. Borchert, John R.**—*M.R.*

5.9–127 551.513:551.515:551.557

Ishimaru, Y., **On the zonal circulation and its perturbation. (Mechanism of the earth's nosphere, 5th communication).** *Geophysical Magazine*, Tokyo, 25(1/2):123–149, Jan. **54.** 17 figs., 13 tables, eqs. **MH-BH**—This paper is the continued and extended study the paper "Fundamental Vorticity Equation and Jetstream," and deals with the problems zonal circulation and its perturbation in the earth's atmosphere. The main results obtained e as follows: 1) The maximum speeds of jet stream theoretically obtained are in good agree-ent with the observed ones. 2) The positions of the jet stream, and the recurvature latitudes tween polar easterlies and westerlies can be derived theoretically under some plausible sumptions. 3) The comparison of these theoretical recurvature latitudes with the observed es of tropical cyclone shows good accordance. 4) The average annual change of the basic neral circulation at the upper troposphere, and jet stream positions are shown. 5) The rturbation of zonal winds and the period of westerly or easterly waves are calculated. 6) The served periodic change of pressure is compared with the theoretical one. *Subject Headings:* **Zonal circulation 2. Jet stream profiles 3. Jet stream theory 4. Zonal perturbations.**—*uthor's abstract.*

5.9–128 551.513:551.501.7

Saito, T., **A note on the zonal index.** *Journal of Meteorological Research*, Tokyo, 5(3):189–3, March **1953.** 7 figs. In Japanese; English summary p. 189. **MH-BH**—The author lculates the zonal westerly index (35°N∼55°N) and the polar easterly index (60°N∼80°N) ring the winters 1951 and 1952 by using the 5-day mean of surface pressure. The results tained are as follows: 1) The "retrograde wave" is clearly identified in the Far East. 2) The asterly wave" is also identified and found to have the same speed as the former. 3) The ove two are found in the polar easterly index and proceed parallel with each other. 4) It pears that the retrograde wave occurs when the zonal westerly wind is weak, while the sterly wave occurs when it is strong. 5) It follows that weather changes connected with the rograde wave are different from those connected with the easterly wave. *Subject Heading:* **Zonal index.**—*Author's abstract.*

5.9–129 551.513:525.3

Young, Andrew, **The effect of the movement of surface masses on the rotation of the rth.** *Royal Astronomical Society, London, Monthly Notices, Geophysical Supplement*, 6(8): 2–485, Oct. **1953.** 5 refs., 9 eqs. **DWB**—The effects of surface mass movements on the ngth of day and variation of latitude are analyzed independently using axes fixed in the id earth. It is found that sudden fluctuations in the angular momentum of the atmosphere ay account for part at least of the irregularities of the observed variation of latitude. The ect of gradual changes of sea level is also considered. *Subject Headings:* **1. Polar displace-ent 2. Rotation of the earth.**—*C.E.P.B.*

5.9–130 551.513.1

Carlin, Albert V. (*U. S. W. B., Wash., D. C.*), **A case of study of the dispersion of energy planetary waves.** *American Meteorological Society, Bulletin*, 34(7):311–318, Sept. **1953.** igs., 3 tables, 8 refs., 2 eqs. **MH-BH**—A clear-cut case of dispersion of energy downstream the mid-tropospheric long-wave pattern during the first two weeks of November 1951 is amined with the help of plots of meridional wind components. The dispersion could be ced over more than half the hemisphere traveling with a speed about twice that of the nal wind at 700-mb. Calculations of group velocity based on ROSSBY's work show good reement with observed values of the speed of dispersion. *Subject Heading:* **1. General culation.**—*Author's abstract.*

5.9–131 551.513.1:551.557

†Mohri, Keitaro (*Central Met. Obs., Tokyo, and Stockholm Univ.*), **On the fields of wind d temperature over Japan and adjacent waters during winter of 1950–1951.** *Tellus*, Stock-lm, 5(3):340–358, Aug. **1953.** 21 figs., 4 tables, 26 refs., 6 eqs. **MH-BH**—First, a mean ss section along the meridian 140°E during three months (Dec. 1950–Feb. 1951) is discussed. e main characteristics are: 1) An extremely strong subtropical jet (75 m sec^{-1}) situated

at 33°N near 190 mb; 2) A semi-stationary sloping surface which divides almost barotro warm tropical air in the south from more or less baroclinic temperate air situated in the nor 3) A slight indication of a polar-front jet situated near 230 mb at 41°N; the weak intensity this jet depends upon the strong variability in position of the polar front. 4) Much warr temperature in the upper troposphere to the south, and much colder temperature in the lo troposphere north of the subtropical jet, as compared with mean conditions at 76°E and 80° The computed mean winds at 140°E are combined with the mean isotachs given by YEH o China, at the 12-km level. Using the acceleration determined from the isotach pattern, mean angle of cross-contour flow at 200 mb is determined to be about 8 (between longitu 110° and 140°E), with a mean cross-contour component of 8 m sec^{-1} toward lower heig in the center of the mean jet stream. Second, daily meridional cross sections through Ja are presented for the period 8 to 15 December 1950. These show an extremely strong dividual jet stream in which the observed maximum wind speed reached a velocity of m than 110 m sec^{-1}, with near-zero absolute vorticity to the south. An associated nea isothermal layer underneath is much deeper (up to 4 and even 6 km) than other parts of globe. It is suggested that this unusual depth results from a combination of a stable la associated with the semi-stationary subtropical jet, and the polar front, when the latter mo southward in east Asia. The behavior of the tropopause in the intermediate atmosphere so of the polar front during this series suggests subsidence of the tropopause and its transforma into the lower boundary of a deep stable layer which is transformed into some kind of fl separating the real tropical air from a more temperate air moving in from the regions n of the Himalayas. *Subject Headings:* **1. Atmospheric circulation 2. Jet stream 3. T perature of the troposphere 4. Subsidence 5. Japan.**—*Author's abstract.*

5.9–132 551.513.1:551

*Poornachandra Rao, C., and Rama Sastry, A. A. (*Andhra Univ., Waltair*), **Meridi eddy flux of energy in the atmosphere.** *Indian Journal of Meteorology and Geophy* 4(3):236–242, July **1953.** 11 tables, 4 refs. **MH-BH**—Eddy transport of heat, both in sensible and latent forms, has been evaluated for three stations in India, namely Allah (25°25′N, 81°51′E), New Delhi (28°39′N, 77°17′E) and Jodhpur (26°18′N, 73°1′E) w all lie near about 27°N. Across 27°N in India the mean seasonal and annual eddy tran of *sensible heat* is weak and directed mainly equatorwards but that of latent heat is marked and directed polewards. *Subject Headings:* **1. Meridional heat flux 2. Ind** *Authors' abstract.*

5.9–133 551.

Silberman, Isadore, **Planetary waves in the atmosphere.** *Journal of Meteorology,* 1 27–34, Feb. **1954.** 5 figs., 18 refs., 21 eqs. **MH-BH**—A method is presented for solvin non-linear barotropic vorticity equation directly by expressing it as a harmonic ten equation and evaluating a number of constants. These equations may be used to fo the future flow pattern by an iterative process. The planetary waves are regarded a turbations superposed on a steady zonal flow in which angular velocity varies with colat The calculations are illustrated by the 500 mb situation on Dec. 4–5, 1950. The negl harmonics of large degree is justified by the damping effect of large-scale lateral m *Subject Heading:* **1. Planetary circulation.**—*C.E.P.B.*

ATMOSPHERIC DISTURBANCES

See also: **Steering isallobaric patterns, density fields and mass divergence . . .** (Hesse), 5.9–5; **Radar detection of dangerous storms** (Perry), 5.9–40; **Radar tracks, Ill. tornado** 5.9–42; **Zonal circulation** (Ishimaru), 5.9–127; **Effects on structures of winds of hurricane force** (Saffer), 5.9–202; **Weather in Sierra Leone** (J.—), 5.9–234.

5.9–134 551.515.

§Bunting, D. C.; Gentry, R. C.; Latour, M. H. and Norton, Grady, **Florida hurric 1950; history and analysis.** *Florida. University Engineering and Industrial Exp Station, Bulletin Ser.*, No. 45, July **1951.** 36 p. 37 figs., 7 tables, 16 refs. **DWB**—

ır of the most damaging storms in 1950, (1) Pensacola area (Aug. 30–31), (2) Cedar Key
a (Sept. 4–6), (3) Miami area (Oct. 17–18) and (4) Gulf of Mexico-Cedar Key area (Oct.
-21). Radar storm detection methods described and illustrated by PPI photographs. The
mation and tracks of the hurricanes are shown by synoptic charts. Methods of forecasting
rricane movements are discussed. Damage amounted to over 31.6 million dollars. *Subject*
adings: **1. Hurricanes, 1950 2. Hurricane damage 3. Hurricane forecasting 4. Florida.**
W.S.

5.9–135 551.515.2

Estienne, Pierre, **Notes de météorologie tropicale.** [Notes on tropical meteorology.]
vue de Géographie Alpine, Grenoble, 41(2):311–326, **1953.** fig., 18 refs. **DWB**—A review,
the benefit of geographers, of current knowledge and theory of the general circulation,
masses, structure of the atmosphere, trade inversions, intertropical front, zone of con-
rgence, easterly waves, tropical cyclone formation and movement and, finally, regional
pects such as occur in Southeast Asia (monsoon conditions), the Antilles or the Western
dian Ocean. Difficulties in forecasting in the tropics are mentioned in connection with
veral of the above subjects. *Subject Headings:* **1. Tropical meteorology 2. Tropical cyclone**
eory.—*M.R.*

5.9–136 551.515.2(729):63

Fors Diaz, Alfonso L., **Observaciones sobre los efectos del ciclón del 24 de Octubre de**
52. [Notes on the damage caused by the cyclone of Oct. 24, 1952.] *Asociación de Técnicos*
ucareros de Cuba, Boletín Oficial, 11(9):441–448, Nov. **1952.** illus. **MH-BH**—After a
ief description of the development of the cyclone of Oct. 24, 1952, the author discusses the
mage to sugar cane as affected by: 1) direction and intensity of wind, 2) rainfall distribution
ring the year (generous rainfall promotes development of the plant and thus diminishes
ot resistivity), 3) topography, 4) type of soil, 5) variety of cane, 6) seed time and 7) maturity
plants. *Subject Headings:* **1. Cyclonic storms 2. Wind damage to sugar cane 3. Cuba.**—
T.

5.9–137 551.515.2(729)

Goberna, J. Rafael (*Dir. Obs. de Belén, Havana, Cuba*), **Paso del último ciclón a través**
Las Villas y Matanzas, Octubre 24, 1952. [Path of the recent cyclone through Las Villas
d Matanzas, Oct. 24, 1952.] *Asociación de Técnicos Azucareros de Cuba, Boletín Oficial*,
(9):435–439, Nov. **1952.** diagr. **MH-BH**—Descriptive account and illustration of the
ssage through Cuba of a cyclonic storm which can be classified among the major cyclones
that area. Development of the winds and rains from Oct. 22 to Oct. 24, 1952 and damage
used by wind and flood are discussed. *Subject Headings:* **1. Cyclone tracks 2. Cyclonic**
orms 3. Cuba.—*G.T.*

5.9–138 551.515.25:51.556.1:551.577.61:368

Hart, M. C., **Tropical revolving storms and windstorm insurance.** *Chartered Insurance*
stitute, London, Journal, 48:89–143, **1951.** 13 figs. **DWB**—After a popular account of
uses, frequency and tracks of storms and wind force with references to insurance premiums,
thor takes up building construction to resist wind and assessment of wind damage risk to
ildings. Other sections deal with damage to crops and trees, fire following storm, and
mage by rain, floods and tidal waves. Finally the practical aspects of insurance schemes
e referred to. *Subject Headings:* **1. Hurricanes 2. Hurricane insurance.**—*C.E.P.B.*

5.9–139 551.515.2(759)

Myers, Vance A. and Rubin, Lillian K. (*U. S. W. B., Wash., D. C.*), **Fifty years of hurri-**
nes. *Weatherwise*, 6(4):91–94, Aug. **1953.** 4 figs. **MH-BH**—Notes on the studies of
rricane tracks, pressure, wind, etc. made to give advice to the U. S. Corps of Engineers
planning construction of levees, dams, etc. in the Lake Okeechobee (Florida) region. The
ajor disaster which occurred on Sept. 16, 1928 at Lake Okeechobee gave impetus to this
oject. Wind speeds are estimated from pressure gradients for the purposes of this study.
ie lowest pressure ever to occur at a land station in the world was 26.35 inches on Sept. 1935

in the Florida Keys. Lower pressures occur over open water than over land. *Subject H*
ings: **1. Hurricane studies 2. Design storms 3. Lake Okeechobee, Fla.**—*M.R.*

5.9–140 551.515.2(729, 7

Norton, Grady (*U. S. W. B., Miami, Fla.*), **Hurricanes of 1952.** *Monthly Wea*
Review, 81(1):12–15, Jan. **1953.** 2 figs., 2 refs. **MH-BH**—Description of five obser
hurricanes in the West Indies area of which one, Hurricane "Able," reached the contin
Chart shows tracks in the West Indies and along the East Coast of the United States. *Sub*
Headings: **1. Hurricanes 2. Hurricane "Able" (1952) 3. United States 4. West Ind**
—*A.A.*

5.9–141 551.515.2:551.556

†Polovkas, Vincent G. and Thompson, Robert A. (*Florida Univ., Dept. Aeron. En*
A storm protection laboratory for testing building components and other materials un
hurricane conditions. *Florida. University. Engineering and Industrial Experiment Stat*
Engineering Progress, 6(9), Sept. **1952;** *Bulletin* No. 56. 15 p. 10 figs., form, refs., bibl
p. 15. **DWB**—The history of the studies of hurricane damage to structures, etc. in Flori
in general and the University of Florida Storm Protection Laboratory in particular, is revie
The laboratory and some of the operations in it are described and illustrated. Most of
tests are with respect to wind and rain stresses on buildings, doors, windows, shutters, electri
equipment, and human beings. Sample test records, including complete meteorological
are reproduced. *Subject Headings:* **1. Hurricane damage laboratories 2. Wind load**
structures 3. Rainstorm damage 4. Hurricane damage 5. Building materials 6. Flo
University. Storm Protection Laboratory.—*M.R.*

5.9–142 551.515.21

Kasahara, Akira (*Geophysical Institute, Tokyo Univ.*), **A note on the vertical struc**
of the pressure and temperature fields in a typhoon. *Meteorological Society of Japan, Jou*
31(1):22–35, Jan. **1953.** 9 figs., 12 refs., 21 eqs. **DWB**—Aerological data for the typ
"Ruth" (Oct. 8, 1951) are analyzed, presenting a surface weather chart and numerous r
distributions of temperature and height anomalies at constant pressure levels. Theore
considerations for the distribution of the vertical circulation are based on an analysis of m
continuity and polytropic change of the air. A fair agreement with observed temper
anomalies was reached. The polytropic isentropic surface rather than the dry adiabati
gives a time picture of vertical currents. *Subject Headings:* **1. Typhoon structure 2. Typ**
"Ruth" (1951) 3. Japan.—*A A.*

5.9–143 551.5

Sakai, H., **On the vector diagram of mean trajectory of moving high pressure.** *S*
for the Long-Range Forecast Research of Tohoku District, Journal, 11(1):23–49, March
tables, diagrs. In Japanese; English summary p. 52; headings in English. **DWB**—I
region 20–50°N, 110–150°E the frequency and vector mean direction of moving anticy
is plotted for each 10° square for each month. The distribution of individual directions
the vector mean is briefly discussed. *Subject Heading:* **1. Anticyclone tracks.**—*C.E.P.B.*

5.9–144 551

§Brunk, Ivan W., **Squall lines.** *American Meteorological Society, Bulletin*, 34(1)
Jan. **1953.** 13 figs., 17 refs. **MH-BH**—Author shows how to identify squall lines on sy
charts by the surface windshifts, where usually an area of severe turbulence is located.
acteristic samples are shown for the hourly movement of the squall. The diurnal freq
of the squall lines is computed (maximum afternoon), as well as the frequency of seve
bulence at different levels (maximum between 2000 and 3000 ft in squall line cases, at
levels in frontal cases). The connection between squall lines and tornadoes, flying con
in squall lines and forecasting problems are discussed. Squall lines move most freq
under an angle of 45° clockwise from the wind direction at 700 mb. (*See also* 4.1–11
1953, *MAB.*) *Subject Headings:* **1. Squall lines 2. Tornadoes 3. Atmospheric turb**
4. United States.—*A.A.*

5.9–145 551.515.8:551.558.21(521.6)

§Nakayama, A., **On the cold front passing over the mountainous region in the central art of Japan. (2nd report). (On the strong wind near Fuji-machi).** *Journal of Meteorogical Research*, Tokyo, 4(12):963–973, March **1953.** 15 figs., 5 tables, 6 refs., 8 eqs. In apanese; English summary p. 60. **MH-BH**—In winter after passage of a cold front from to S a strong local NNW wind occurs near Fujiimachi on N end of Suruga Bay (35°N, 38°E) while a light SE wind blows at Mishima 25 km to east. This is examined synoptically surface and upper air) during cold front of Jan. 26–27, 1951. The strong wind is associated ith a rise of pressure at Kofu in the mountains to the north, attributed to cold air advection nd upper isallobaric flow due to a trough over Suruga Bay to lee of the mountains. *Subject leadings:* **1. Cold fronts 2. Lee effects 3. Japan.**—*C.E.P.B.*

5.9–146 551.515.8:551.589

Pône, R. (*Met. Metropolitan Ser., Paris*), **Essai de classification des sondages d'après eur structure.** [Classification of soundings by their structure.] *Journal Scientifique de la Météorologie*, 4(15):87–98, July/Sept. **1952.** 8 figs. English and Spanish summary p. 87. **DWB**—Classification of air masses proposed, which is not based "on their geographical origin nd temperature, but rather on the evolution they have undergone in time." The basic assified types are: 1) radiative type, 2) convective type, considering also the effect of horiontal convergence or divergence, and 3) kinematic evolution type. The arrangement of ese air masses in relation to the center of action and the influence of fronts is shown. Their ain properties are outlined, schematic aerograms given and the cloudiness inside of the air ass and at the front is described. *Subject Headings:* **1. Air mass classification 2. Upper ir soundings.**—*A.A.*

5.9–147 551.515.82

§Ogusu, J., **Change of weather elements associated with cold front passage.** *Journal of Meteorological Research*, Tokyo, 4(12):985–992, March **1953.** 12 figs., 4 tables, 8 refs. In apanese; English summary p. 61. **MH-BH**—Cold fronts are classified into: A) anafronts ith decrease of temperature and wind velocity, increase of humidity and mixing ratio, and recipitation with or after frontal passage; B) katafronts with increase of temperature and ind, decrease of humidity and mixing ratio, precipitation with or slightly before frontal assage. Types are illustrated by synoptic charts and upper air data, and a schematic section f a katafront is given. *Subject Headings:* **1. Cold fronts 2. Japan.**—*C.E.P.B.*

RADIATION AND TEMPERATURE

See also: **Collection and absorption of fog particles** (Kamiyama and Moriguchi), 5.9–74; **Efficiency of atmos. as thermodynamic engine** (Banerji), 5.9–112; **Sources of atmos. and planetary energy** (Gerson), 5.9–121; **Monthly change of pressure and solar radiation** (Harris), 5.9–179; **Effect of wind on night time radiational cooling** (Gossard), 5.9–200; **Results of the captive radiosonde observations** (Ishii), 5.9–220; **Legendre series of the scattering functions for spherical particles** (Sekera), 5.9–306.

5.9–148 551.521.3:551.521.61:546.212

Cloud, William H., **Pressure broadening of pure rotation lines of the water vapor spectrum rom 490 to 590 wave numbers.** Johns Hopkins University, Contract NOnr-248 (01), Progress Report, May 15, **1952.** 128 p. 18 figs., 34 refs., 63 eqs. **DWB**—Carefully measured transission by water vapor in the 490–590 cm^{-1} region with about 2 cm^{-1} spectral resolution is ompared (at several maxima and minima) with that calculated by numerical integration of he theoretical spectrum using line intensities supplied by BENEDICT and assuming a triangular slit function. Discrepancies between theory and experiment are attributed to nonniformity of line widths, for the variation of which quasi-empirical formulas are given. bsorption by wings of the strong lines around 200μ is shown to be negligible in comparison o that by lines in the region studied. A summary of theories concerning line shape and line readth is given and the Lorentz line shape is considered to be valid up to more than 10 cm^{-1}

from the line centers, making detection of asymmetry beyond the experimental accura The author concludes with interesting speculations concerning the importance of the rotatio water band for the atmospheric heat balance. *Subject Headings:* **1. Pressure broadening spectral lines 2. Water vapor spectroscopy 3. Infrared spectroscopy. I. Johns Hopk University II. Contract Nonr-248 (01).**—*L. Kaplan.*

5.9–149 551.521.3:535

Curtis, A. R. and Goody, R. M., **Spectral line shape and its effect on atmospheric tra missions.** *Royal Meteorological Society, Quarterly Journal*, 80(343):58–67, Jan. **1954.** 2 fi table, 18 refs., 31 eqs. **DWB**—The detailed shape of a pressure-broadened spectral obtained by LINDHOLM has been evaluated and used to derive an expression of the m transmission of disordered band. This is compared with the corresponding expression us the Lorentz line shape. It is shown that the difference in mean transmission for these line shapes is scarcely detectable spectrophotometrically in the cases of the principal tell bands of ozone and water vapor, and probably also for carbon dioxide. It is concluded t until more important problems have been solved, it is probably uneconomical to make us line shapes any more complicated than that of LORENTZ for computations of heating rate the atmosphere, provided always that theory is used only in order to apply existing laborat data to atmospheric conditions. *Subject Heading:* **1. Atmospheric absorption.**—*Auth abstract.*

5.9–150 551.521.3:551.521.61:54

Locke, J. L. and Herzberg, L., **The absorption due to carbon monoxide in the infr solar spectrum.** *Canadian Journal of Physics*, 31(4):504–516, May **1953.** 4 figs., ta 17 refs., 4 eqs. **DWB**—The conditions are examined which are necessary to reduce gravitational field equations in first approximation to a set of ordinary wave equations. T conditions are evaluated for the case of the gravitational field produced by an acceler particle, and it is shown that they restrict the consideration to observers whose radius ve towards the source of the field is perpendicular to the vector of acceleration of the partic the retarded time. *Subject Headings:* **1. Carbon monoxide absorption 2. Infrared absorp** —*Authors' abstract.*

5.9–151 551.5

†*London, Julius, **The distribution of radiational temperature change in the Nort Hemisphere during March.** *U. S. Air Force. Cambridge Research Center, Geophy Research Papers*, No. 18, Dec. **1952.** 64 p. 19 figs., 12 tables, bibliog. p. 57–64. **DB** The average radiation flux and flux divergence in the atmosphere during March is comp as a function of the chief absorbents of terrestrial and solar radiation, and the physica rameters of the atmosphere such as pressure, temperature and cloudiness. The infrared for water vapor is computed graphically from ELSASSER radiation charts. The absorpti insolation by water vapor is computed with the aid of an empirical formula. The net radi flux divergence is then computed by methods of finite differences. It is shown that the troposphere constitutes an energy source insofar as radiative processes are concerned, and at all latitudes, the largest radiational heat loss is in the middle troposphere. It is also sh that the effect of cloudiness is to concentrate this maximum radiational cooling to laye about the height of middle cloudiness (3 to 4 km). The net heat loss at this level is fou be about 1.5 to 2.0°C day^{-1}. It is suggested that the major contribution to heatin troposphere, to offset the loss due to radiation, is the release of latent heat by condens *See also item* 3.9–123, Sept. 1952, *MAB* for similar article. *Subject Headings:* **1. Radi flux 2. Radiational temperature change 3. Radiational cooling 4. Northern Hemisphe** *Author's abstract.*

5.9–152 551.521.3:5

Plass, Gilbert N., **A method for the determination of atmospheric transmission fun from laboratory absorption measurements.** *Optical Society of America, Journal*, 42(9) 683, Sept. **1952.** 38 eqs. **DWB**—The author develops formulas representing relation between laboratory absorption measurements and atmospheric quantities of line inte

alf-width and line shape. The problem is treated for regions with strong and with weak eat transfer. In the equations developed, fractional absorption is expressed as a function f pressure and optical thickness. Examples of the application of these expressions to partic-lar problems of atmospheric radiation are offered. *Subject Headings:* **1. Atmospheric absorp-on 2. Absorption spectra.**—*G.T.*

5.9–153 551.521.3

Plass, Gilbert N., **Regions of validity of various absorption coefficient approximations.** *ournal of Meteorology*, 11(2):163–165, April **1954.** 5 refs., 20 eqs. **MH-BH**—The regions f validity given by L. D. KAPLAN (*see item* 4.10–140, Oct. 1953, *MAB*) in tables and graphs re set out in analytical equations. *Subject Heading:* **1. Atmospheric absorption. I. Kaplan, . D.**—*C.E.P.B.*

5.9–154 551.521.3

†Yamamoto, Gi-ichi, **Synthetic report on the atmospheric radiation.** *Oceanography and Meteorology*, Nagasaki, 5(1/2):2–12, June **1951.** 21 figs., refs., eqs. In Japanese. **DWB**—n this review of international literature the author discusses results achieved in the fields f short-wave radiation, the investigation of absorption coefficients, radiation at night (in-uding description of latest development in instruments for its measurement), and stratospheric pectroscopy. Theories developed in the literature quoted are discussed. The majority of ne papers reviewed were published during the last 30 years. *Subject Headings:* **1. Atmospheric adiation 2. Radiation instruments 3. Nocturnal radiation 4. Reviews.**—*G.T.*

5.9–155 551.521.31

Gifford, Frank, Jr. (*Lowell Obs., Flagstaff, Ariz.*), **An alignment chart for atmospheric ansmission of solar radiation.** *Monthly Weather Review*, 81(1):11, Jan. **1953.** ref. **MH-H**—Nomogram gives percentage transmission of solar radiation versus total water vapor and r mass. *Subject Headings:* **1. Solar radiation 2. Atmospheric transmission 3. Nomograms.** *-A.A.*

5.9–156 551.521.61:551.576

*Beardsley, Niel and Linton, Francis D., **Comparison of the attenuation of infrared and isible radiation by clouds on Mt. Washington, New Hampshire, Aug. 1951.** *U. S. Wright ir Development Center, Technical Report*, 53-232, April **1953.** 36 p. 9 figs., 6 tables. **DWB**—Measurements of transmission, through clouds on top of Mt. Washington (6293 ft MSL, orham, New Hampshire), of the total visible and infrared radiation from a red-hot source nd of that part of the same radiation which had wave lengths of less than 2.8 microns, are escribed. An analysis of the data is presented herein. The infrared measurements were btained by using a total infrared detector, the United States Navy's Bureau of Ordnance est Unit Mark VII. The Mark VII could be equipped with a plate glass window and measure-ents were made both with and without the window in use. Data on the liquid water content f the clouds, as supplied by personnel of the Mt. Washington Observatory, and other meteoro-gical observations, provided by personnel of the United States Weather Bureau, have been tilized in making analytical computations. Data discussed in Section IV were taken with ne Infrared Receiving Set AN/AAR-6(XA-1) in the spectral region between 1.0 and 4.3 icrons. Attenuation coefficients between 0.02 and 0.31 m^{-1} were observed for the total adiation and between 0.03 and 0.22 m^{-1} for radiation of less than 2.8 micron wave length. *ubject Headings:* **1. Infrared transmission through clouds 2. Infrared radiation instruments Mt. Washington, N. H.**—*Authors' abstract.*

5.9–157 551.521.61:523.78

Blackwell, D. E., **A comparison of the intensities of infra-red and violet radiation from ne solar corona at the eclipse of 1952 February 25.** *Cambridge, England. University. Observatories, Contributions*, No. 13 [1952?]. *Royal Astronomical Society, Monthly Notices*, 12(6):189–201, **1952.** 10 figs., 3 tables, 10 refs. **DWB**—Measurements made in Khartoum

at the total solar eclipse of 1952, February 25, show a considerable excess of infra-red radiati in the solar corona at 2·5 R. from the solar centre. The ratio

$$\frac{I(1\cdot9\mu,\ 2\cdot5\ R.)}{I(0\cdot43\mu,\ 2\cdot5\ R.)} \Big/ \frac{I(1\cdot9\mu,\ 1\cdot5\ R.)}{I(0\cdot43\mu,\ 1\cdot5\ R.)}$$

equals 2·17, where $I(p\cdot q)$ is the intensity of the corona at the wave-length p and distar q from the Sun. The measurements were made with a 20-in. mirror of 45 in. focal leng using a lead sulphide cell and a photomultiplier. It is shown that the infra-red excess suppo the current theory of an F-corona caused by diffraction of sunlight by a cloud of interplanet dust particles. Three models with widely differing distributions of dust are calculated it is not possible to distinguish between them by using existing infra-red and visible data alo *Subject Headings:* **1. Solar eclipses 2. Infrared radiation 3. Khartoum, Sudan.**—*Auth abstract.*

5.9–158 551.521.61:551.

*Elsasser, W. M. and King, J. I., **Transmission data for the far infrared bands of carb dioxide and ozone.** Utah. University. Dept. of Physics, Contract AF 19(122)-3 Technical Report No. 9, Sept. **1953.** 27 p. 11 figs., 6 tables, 23 refs. **MH-BH**—Rep contains first part of study aimed at application of mathematical theory of radiative tran (*see item* 5.1–165, Jan. 1954, *MAB*) to actual CO_2 and O_3 bands in the atmosphere. appendix gives supplementary information on Chap. II of Report 6, namely on recent ref ments of transmission functions and generalized absorption coefficients. Tables and gra give transmissivity and absorption coefficient of CO_2 and O_3. *Subject Headings:* **1. Radia transfer 2. Infrared radiation 3. Carbon dioxide absorption coefficients 4. Ozone. I. U University. Dept. of Physics II. Contract AF 19(122)-392.**—*M.R.*

5.9–159 551.521.61:016:535

†Gore, Robert C. (*Stanford Res. Lab., Stanford, Conn.*), **Infrared spectroscopy.** *Analy Chemistry*, Wash., D. C., 24(1):8–13, Jan. **1952.** 419 refs. **DLC**—The 419 references listed alphabetically by author and referred to by corresponding numbers in the ou that is grouped under eleven main subject headings containing a detailed breakdown in form of brief annotations. Under "Quantitative analysis" and "Astrophysical" are fo references of meteorological interest. Single reprints available at American Chemical Soc Reprint Dept. for $1.50. *Subject Headings:* **1. Infrared spectroscopy 2. Spectros bibliographies.**—*W.N.*

5.9–160 551.521.61:551

Kaplan, Lewis D., **Energy transfer by infrared bands.** *Journal of Meteorology*, 1 16–19, Feb. **1954.** 2 tables, 12 refs., 14 eqs. **MH-BH**—The energy transfer betwee layers and that between an air layer and black surface are examined for a schematic rota vibration band of a gas whose mixing ratio decreases with height. It is found, in ge that most transfer is due to the central portions of moderately weak lines. Small erro transmission functions may lead to large errors in energy transfer, especially in the u half of the atmosphere. This is particularly true of the black "line-center," approxima *Subject Headings:* **1. Energy transport 2. Infrared radiation.**—*Author's abstract.*

TEMPERATURE

See also: **Quantitative forecasting at Tokai Dist.** (Kato), 5.9–80; **Spring frost damage to fruit** (Rogers), 5.9–89; **The why of climate** (Baum), 5.9–113; **Snow/ice limit and overlying atmos.** (Lamb), 5.9–180.

5.9–161 551.52

Abraham, H. J. M., **Annual fluctuations in quartz clock error and frequency** *Nature*, London, 173(4393):73–74, Jan. 9, **1954.** 4 figs., table, 3 refs. **DWB**—Perfor of quartz clocks in S. Hemisphere was investigated through a year. Temperature effects found in some clocks, possibly through variation in rate of aging. An annual variat

te of earth's rotation is one factor. *Subject Headings:* **1. Quartz clocks 2. Rotation of the rth.**—*C.E.P.B.*

5.9–162 551.524:577.15

Belehradek, Jan., **Temperature and rate of enzyme action.** *Nature*, London, 173(4393): –71, Jan. 9, **1954.** 2 figs., 2 tables, 9 refs., eqs. **DWB**—The log (absolute temperature) pression for enzyme activity often gives a curve. Author examines expression

$$\log\left(\frac{k_2}{k_1}\right) = b \log \frac{t_2 - \alpha}{t_1 \alpha}$$

here b is resistance to free movements of molecules in protoplasmic phases and α is threshold low which action is blocked by cold. Values of α and b are given for various enzymes. *ubject Headings:* **1. Temperature 2. Enzymes.**—*C.E.P.B.*

5.9–163 551.524:551.311.181

Breitner, Hans, J., **Über die Geschwindigkeit des Dickenwachstums von Eisdecken.** On the rate of increase of thickness of ice sheets.] *Deutsche Hydrographische Zeitschrift*, 1):34–39, **1953.** 5 figs., table, 5 refs. English and French summaries p. 38. **DWB**—A boratory method is described for measuring the rate of growth of ice thickness in solutions NaCl at different temperatures. Some results are plotted and discussed. *Subject Heading:* **Sea ice formation.**—*C.E.P.B.*

5.9–164 551.524:551.579.5:632.4:633.15

Harper, John L., **Influence of temperature and soil water content on the seedling blight maize.** *Nature*, London, 173(4400):391–393, Feb. 27, **1954.** 3 figs., 4 refs. **DLC**— rginian White Horsetooth corn was grown in soils of various moisture content and at various mperatures. Greatest damage by fungus (>20% failure) occurred at 30°C with low soil oisture and 8°C. *Subject Headings:* **1. Climatic effects 2. Fungus diseases 3. Corn.**— *E.P.B.*

5.9–165 551.524.32:551.581:551.588.1

Lautensach, Hermann, **Die Isanomalenkarte der Jahresschwankung der Lufttem- ratur; Ein Nachtrag.** [The isanomaly chart of the annual range of temperature: a supple- ent.] *Petermanns Geographische Mitteilungen*, 97(4):274–275, **1953.** table. **DLC**— eferring to his attempt in *Petermanns Geographische Mitteilungen*, 1952, p. 145 and by K. F. OLM in *ibid.* 1953, p. 26, to avoid an expression which becomes infinite at equator; other pressions are equally difficult and author concludes that no formula is satisfactory for the hole world. *Subject Headings:* **1. Seasonal temperature variations 2. Solar climate 3. Con- nentality.**—*C.E.P.B.*

5.9–166 551.524.34:581.03

Keränen, Jaakko (*Dir. Central Met. Institute, Finland*), **On temperature change in Finland uring the last hundred years.** *Fennia*, Helsinki, No. 75:5–16, **1952.** 4 figs. **DWB**—Recent armings (1934–38) observed in all seasons, the spring was shorter than normally, the growing ason 11–24 days longer, the period without ground frost increased by 20–31 days. Cumu- tive temperature above 5°C increased by 22–54%. An analysis of ten year overlapping eans of monthly temperatures (Helsinki and Oulu) for the period 1828–1950 show fluctuations ound a generally increasing trend. *Subject Headings:* **1. Climatic variations 2. Growing eason 3. Temperature trends 4. Finland.**—*A.A.*

5.9–167 551.524.35:551.577.34(436)

Schreyer, Richard, **Bemerkenswerte Anomalien der Temperatur und des Niederschlags Wien im April und November der letzten zehn Jahre 1943 bis 1952.** [Remarkable ano- alies of temperature and precipitation in Vienna in April and November during the last ten ears 1943–1952.] *Wetter und Leben*, 5(3/4):84, May **1953. MH-BH**—A table giving the ean April and Nov. air temperature and precipitation for the years 1943–1952, inclusive, nd excess of mean air temperature 1881–1930 over mean is given. It is shown that in every

April during this decade the temperature exceeded the normal and the rainfall was b
normal; in Nov. most of the years showed an abnormally high temperature and abnorm
high precipitation. *Subject Headings:* **1. Temperature anomalies 2. Precipitation anoma
3. Vienna, Austria.**—*I.L.D.*

5.9–168 551.5

Battan, L. J. and Harrington, E. L., **Variations of height of freezing level.** *Amer
Meteorological Society, Bulletin*, 34(5):225–226, May **1953.** 2 tables, ref. **DWB**—Si
taneous upper air soundings from stations within a radius of about ten miles made during
Thunderstorm Project provide the data for the height of freezing level. Tables giving dat
the range of height of 0°C isotherm for Florida-summer 1946, for Ohio-summer 1947,
mean hourly changes of height of 0°C isotherm for Florida 1946 and for Ohio 1947. *Su
Heading:* **1. Zero isotherm.**—*I.L.D.*

5.9–169 551.524.7

Frankcom, C. E. N., **Low tropopause temperature.** *Meteorological Magazine*, Lon
83(983):154, May **1954.** table. **DWB**—At O.W.S. Station India (61°N, 15°W) −108°F
recorded at tropopause (160 mb, 42800 ft) on Jan. 9, 1954. *Subject Headings:* **1. Uppe
temperatures 2. North Atlantic.**—*C.E.P.B.*

SOIL TEMPERATURE

5.9–170 551.525:55

Brooks, F. A. and Rhoades, D. G. (*Agric. Expr. Station, Univ. of Calif., Davis*), **Da
partition of irradiation and the evaporation chilling of the ground.** *American Geoph
Union, Transactions*, 35(1):145–152, Feb. **1954.** 5 figs., refs. p. 152. **MH-BH**—The pr
study concerns daytime conduction and convection at the ground; how added soil moi
magnifies the heat-flow cycle; and how latent heat of vaporization offsets the diurnal
perature cycles. Measured diurnal cycles of net radiation, conduction, and convection fo
ground are formalized to show how the amplitudes and phase lag of half-cycle temper
and conduction waves indicate the partition of energy at the ground surface. A series o
test plots of five acres each was studied during the spring frosts in a pear orchard near Lak
Two plots were disk-cultivated, and one of these was immediately flood-irrigated li
The observed diurnal magnitudes of heat flow were more than twice as great in the wa
plot as in the unirrigated. The striking results are not the effect of disk cultivatio
rather that of the chilling caused by application of water. The watered plot took more
ten days (in April) to recover from the evaporation chill (but then warmed up more tha
other three plots and two weeks after flooding was definitely less liable to frost than t
watered plots). These investigations have the considerable advantage of direct measur
of heat-conduction rates into and out of the ground. Much remains to be done, how
to establish empirical coefficients to be used with simplified formulas. The measurem
evaporation is an important future objective, but knowledge of total daily water loss fr
soil can be used in the formulas to get a fair understanding of the diurnal thermal sy
Subject Headings: **1. Soil temperatures 2. Evaporation from soil 3. Convection 4.
prevention.**—*Authors' abstract.*

5.9–171 551.525:551.

Fukutomi, Takaharu, **Effect of ground temperature upon the thickness of snow**
Low Temperature Science, Sapporo, Japan. No. 9:145–148, **1953.** fig., ref. In Jap
English summary p. 147–148. **DWB**—With the object of searching for hot-springs, the g
temperature at 1 m depth and the thickness of snow cover were measured at 114 statio
neighborhood of Ōnuma Lake in Hokkaido on Jan. 29–31 and Feb. 11–15, 1950. The g
temperature and the snow-thickness varied within the ranges of 10∼1°C and 0∼
respectively. The results shown in fig. 1 indicate that there exists a negative corr
between the ground temperature at 1 m depth and the thickness of snow cover. The g
temperatures at the surface were found to be 0.0°C, except at some stations where the thi
of snow cover was less than 20 cm. Thus, the relation shown in fig. 1 may be regarded
between the gradient of ground temperature and the thickness of snow cover. It v

rtained that this correlation is the effect of snowmelting due to the temperature gradient the ground. *Subject Headings:* **1. Earth temperature effects on snow cover 2. Snow elt.**—*Author's abstract.*

5.9–172 551.525.2:551.578.46

Nechaev, I. N., **Methods of temperature observations on a snow surface.** Translation Nikolaĭ T. Zikeev of "O metodike nabliudenii temperatury poverkhnosti snega." *Leningrad. Glavnaia Geofizicheskaia Observatoriia, Trudy*, No. 25(87):84–87, **1951.** 2 figs. **DWB**—test was made from Feb. 27 to March 31, 1950, by the Central Geophysical Observatory, ningrad, on an experimental plot of the Division of Methods of Observation, to determine e range of experimental error in measuring snow surface temperatures and to find a better ethod of installing thermometers, as well as to determine the cause of errors. Several ermometers were installed: 1) on the snow surface, 2) under the snow surface, 3) partly ried and 4) at 2 m elevation. The thermometers installed on the snow surface often show sitive temperatures owing to incoming radiation (in daytime) and to "undermelting" hich results in the thermometer recording only its own temperature. Graphs show magnitude error for the different installations during the course of a clear or a cloudy day, or night, spectively. (For abstract of original *see item* 3.8–156, Aug. 1952, *MAB.*) *Subject Headings:* **Snow surface temperature measurements 2. Snow temperature measurement accuracy Observation techniques 4. Translations. I. Zikeev, N. T.** (*trans.*).—*M.R.*

5.9–173 551.525.4:631.43

de Vries, D. A. and de Wit, C. T., **Die thermischen Eigenschaften der Moorböden und e Beeinflüssung der Nachtfrostgefahr dieser Böden durch eine Sanddecke.** [The thermal culiarities of peat soils and the influence of a sand cover on their night frost risk.] *Meteorogische Rundschau*, 7(3/4):41–45, March/April **1954.** 3 figs., 3 tables, 14 refs., 4 eqs. **DWB**—eat conductivity of 4 Dutch humus soils with different admixtures of sand and mud was easured and also calculated theoretically at different moisture contents. For 2 of them the ecific heat of dry soil was measured. It is shown that the practice of covering soil with -15 cm (not more) of sand can be expected to reduce frost risk. Mixing of the upper soil yers with sand has a similar effect, but smaller, especially in dry periods. *Subject Headings:* **Soil conductivity 2. Soil temperatures 3. Netherlands.**—*C.E.P.B.*

LAKE AND RESERVOIR TEMPERATURES

See also: **"Climatic" prolongation of bathing season on German North Sea Coast** (Goedecke), **5.9–294.**

5.9–174 551.526:551.481.1

Kolesnikov, A. G., **Khod temperatury vody v vodokhranilishche v zimniĭ period.** [Temrature variation of water in reservoirs during the winter period.] *Akademiia Nauk SSSR, oklady*, 92(1):37–40, Sept. 1, **1953.** ref. 17 eqs. **DLC**—During the winter, when ice has rmed on the surface, the water temperature of a reservoir is determined by heat exchange th the bottom water layers which retain their heat content owing to poor conductivity. ieir content can be determined quantitatively by means of the curve of temperature disbution at the bottom during ice formation on the surface; and it is shown that this curve n be determined from the march of temperature at the bottom during summer and fall. ie equations for the march of temperature in the reservoir during winter is derived and its plications illustrated. *Subject Headings:* **1. Vertical water temperatures 2. Reservoirs.**—*L.D.*

5.9–175 551.526.8:551.481.1

Mortimer, C. H., **Models of the flow-pattern in lakes.** *Weather*, 9(6):177–184, June **54.** 5 figs., plate. **MH-BH**—Summer temperature stratification of deep lakes is described. was first represented by a 2-layer model with water and phenol to represent epi- and hylimnion separated by the thermocline. Wind-driven circulation is shown and compared th displacement and oscillations of the thermocline in natural lakes. An improved 3-layer odel to include the thermocline layer was then constructed and the flow is shown in photos d diagrams. *Subject Headings:* **1. Lake temperatures 2. Lake circulation.**—*C.E.P.B.*

PRESSURE AND WIND

PRESSURE

See also: **Surface pressure-field in the Mediterranean** (Blecker), 5.9–114; **Pressure broadening of the water vapor spectrum,** (Cloud), 5.9–148; **Comparison: wind recorded by anemograph and geostrophic wind** (Marschell); **Standard pressure surface height determination** (Tanaka), 5.9–37.

5.9–176 551.54:55

§Tomaschek, R., **Non-elastic tilt of the eath's crust due to meteorological pressure tributions.** *Geofisica Pura e Applicata*, 25:17–25, **1953.** 7 figs., 2 tables, 6 refs. **MH-B** The disturbance in the records of tilt measurement made with horizontal pendulums in a n at a depth of 143 ms. below the surface where the temperature was constant within ±0 are shown to coincide with a very sudden barometric change resulting from the passage barometric wedge consisting of a warm front followed by a cold front. The irregulan measurement is explained on the hypothesis "that non-elastic movements of individual tect blocks occur under the influence of loading forces on the earth's current." *Subject Head* **1. Atmospheric pressure effects 2. Tectonics.**—*I.L.D.*

5.9–177 551.542.1:551.513.1

Diaz, Emilio L., **El efecto dinámico de la Cordillera de Los Andes y el aislamineto acción perturbadora regional y superior.** [The dynamic effect of the Cordillera of the A and isolation of the regional and upper air perturbations.] *Meteoros*, Buenos Aires, 3(1): Jan./March, **1953.** 2 figs., 8 tables. Spanish and English summaries p. 7. **DWB–** author calculated the effect produced by propagation upon pressure variations registered i Pacific, the dynamic effect of the Andes upon the circulation and pressure on the eastern and the effect of the persistence of anomalies in the pressure field. It was found 1) changes in horizontal barometric gradient at the surface on the Pacific coast appe pressure variations east of the Andes; an increase of gradient producing a fall in pressur vice versa; 2) the propagations of barometric perturbations can determine 50% of the pre variations over Argentina; 3) a decrease in gradient on the Pacific coast due to a fall of pre in the north has an anticyclogenetic effect upon the region east of the Andes; 4) tha dynamic trough tends to become migratory but dies out rapidly; 5) the effect of persiste pressure anomalies is greater in the subtropics or close to the permanent Atlantic High; junction linking pressure anomalies with gradient anomalies is of an experimental typ that the sum total of the propagation effect, the dynamic effect and persistence are respo for about 52% to 61% of the pressure anomalies over Argentina. In calculating these the author gives linear and hyperboloidal regression equation, isolines and a graphic m *Subject Headings:* **1. Upper air pressure variations 2. Pressure gradient 3. Atmos circulation 4. Andes.**—*I.L.D.*

5.9–178 551

Ekhart, E., **Der Jahresgang des Luftdrucks nach Breite und Hohe.** [Annual pr variation with latitude and altitude.] *Geofisica Pura e Applicata*, 26:112–118, **1953.** table, 3 refs. In German; German, English and French summaries p. 112. **MH-** The yearly course of air pressure in the Northern Hemisphere between sea level and is treated for an average meridian profile. The first two terms of harmonic analy represented and discussed in dependence of altitude and geographic latitude. A com of the results with those of a similar investigation carried out by V. Conrad shows th latter are valid only for the Alps for which they have been deduced. *Subject He* **1. Annual pressure variations 2. Latitude effects 3. Altitude influences 4. N Hemisphere.**—*Author's abstract.*

5.9–179 551.543.2 55

Harris, Miles F. (*U. S. W. B., Wash., D. C.*), **Normal monthly change in sea level p and in the gradient of effective solar radiation.** *Monthly Weather Review*, 81(7):1 July **1953.** 2 figs., 2 tables, 4 refs. **MH-BH**—Isopleths of change in the latitudinal m sea level pressure are shown for the Northern Hemisphere and compared with the n

ange in northward gradient of effective solar radiation. There is some similarity between th isopleth fields, which resulted in a correlation of 0.43 or 0.55 with a lag of one-half month. ata are given also numerically. *Subject Headings:* **1. Annual pressure variations 2. Solar diation 3. Northern Hemisphere.**—*A.A.*

5.9–180 551.547:551.524.7:551.578.4

Lamb, H. H., **Two-way relationships between the snow/ice limit and 1000–500 mb thicksses in the overlying atmosphere.** *Great Britain, Meteorological Research Committee, .R.P.* 834, Sept. 29, **1953.** 16 p. 2 figs., 7 tables, 15 refs. Mimeo. **GB-MO**—Deals st with relations between thickness 1000–500 mb in British Isles, E. Atlantic and N.W. irope and temperature at surface, 850, 700 and 500 mb. Change from rain to snow occurs th thickness about 17,150 ft (oceanic) or 17,400 ft (continental). The limit of a snow or -covered surface in Europe has a mean thickness of 17,260 ft; at normal 0°C M.S.L. isotherm was 17,500 ft. Encroachments of greater thickness (up to 18,000 ft) over snow-covered eas were short-lived; this favors persistence of snow-cover. High ground is an effective rrier. Effect of an extensive snow cover on severity of winter is considered. *Subject adings:* **1. Relative topography 2. Snow cover.**—*C.E.P.B.*

5.9–181 551.547.2

Blinova, E. N., **K voprosu ob opredelenii davleniia na urovne moria.** [Determination of essure at sea level.] *Akademiia Nauk SSSR, Doklady,* 92(3):557–560, Sept. 21, **1953.** eqs. **DLC**—In a previous paper (*Ibid.*, 39(7), 1943) the author developed a method for termining the average planetary pressure field over a large time interval for a given temrature field using an equation of FRIDMAN expressing the change of vortex vector in a given rticle. The equation was projected along a vertical axis, and members with vertical velocity re neglected and the simplified equation was used to calculate the pressure for a mean nospheric level. In this paper these equations are solved without neglecting the members th vertical velocity. *Subject Headings:* **1. Sea level pressures 2. Pressure fields 3. Veral velocity.**—*I.L.D.*

WIND

See also: **Error in value of wind intensity in Beaufort scale** (Vilkner), 5.9–31; **Wind extrapolation device** (U. S. Air Weather Service), 5.9–33.

5.9–182 551.55:629.13

Foul wind at Fairweather. *Flying Safety,* Wash., D. C., 19:(1)10–11, Jan. **1954.** photo., agr. **DWB**—Unusually strong and unpredictable winds have been encountered frequently the vicinity of Cape Spencer and the Fairweather Range in the NE corner of the Gulf of aska. Pilots flying from Sitka to Anchorage have learned (after a number of accidents or lose shaves") to follow a flight plan which takes them farther out to sea away from these high nges. The winds (100–130 knots at 7000–9000 ft) were at first thought to be jet stream inds but after checking with synoptic charts it was found that they are erratic winds conected with rapid cyclogenesis or deepening in the Gulf of Alaska. *Subject Headings:* **1. Aerial vigation 2. Extreme wind speeds aloft 3. Gulf of Alaska.**—*M.R.*

TURBULENCE

See also: **Diffusion theory applied to dispersion of stack gas** (Katz), 5.9–98; **Study of turbulent diffusion by atmos. eddies,** 5.9–106; **Determination of coeff. of turbulent mixing by Ertel's method** (Borushko), 5.9–116; **A new conservation-theorem of hydrodynamics** (Ertel), 5.9–118; **Approximations of horizontal wind components** (Hollmann, Reuter), 5.9–122; **Eddy diffusion in shear zones** (Lettau), 5.9–123; **Structure of atmos. turbulence** (MacCready), 5.9–124; **Determination of turbulent exchange and mean wind velocity** (Shcherbakova), 5.9–125.

5.9–183 551.551:533.15

Frenkiel, F. N. (*Applied Physics Lab., Johns Hopkins Lab., Silver Spring, Md.*), **On the tistical theory of turbulent diffusion.** *U. S. Air Force. Cambridge Research Center, Geoysical Research Papers,* No. 19:415–436, Dec. **1952.** 5 figs., 15 refs., 76 eqs. **DWB**—Basic

principles of the statistical theory of turbulence are explained and relations are derived small and large dispersion times. For general cases the shape of the correlation curve to be considered. It is shown how to compute the turbulence characteristics, measuring turbulent diffusion. Furthermore, the mean concentration distribution and the dispers from instantaneous and continuous point sources is discussed. A non-dimensional distribut function is developed. The conventional coefficient of eddy diffusion is not sufficient for adequate description of the turbulence state, since different turbulence intensities and sca measured by the variance and the Lagrangian correlation coefficient, can give the same fusion coefficient. *Subject Headings:* **1. Statistical theory of turbulence 2. Turbulent fusion.**—*A.A.*

5.9–184 551.551:551

Jones, D. C. E., **Further investigations of high-level clear-air turbulence.** *Meteorolog Magazine*, London, 83(984):166–173, June **1954.** 6 figs., 3 tables, 4 refs. **MH-BH**—Rep (147) of severe turbulence (>±0.5 g) over British Isles are classified by weather situati 98 were near jet stream, mostly below axis on low pressure side but some above axis on l pressure side. A number of reports are plotted against vertical and horizontal positions o axis. Severe turbulence generally occurred when the vector difference 500–300 mb exce 35 kt and horizontal shear 0.2/hr. *Subject Headings:* **1. High level turbulence 2. Jet stre** —*C.E.P.B.*

5.9–185 551.551:551

*Panofsky, Hans A., **Statistical properties of the vertical flux and kinetic energy at meters.** Pennsylvania. State College. Mineral Industries Experiment Station, Con AF 19(604)-166, Scientific Report No. 2, July 1, **1953.** 78 p. 20 figs., 9 tables, 12 refs., **MH-BH**—Micrometeorological observations on the 410 ft Brookhaven (Upton) N. Y. teorological tower on 22 occasions between Oct. 4, 1950 and Jan. 15, 1953 are analyzed tabulated to show: 1) the frequency with which measurements should be made, and 2) length of period over which observations should be carried out in order to appropri determine the vertical flux and kinetic energy at 100 m. In order to do this, it was neces to define turbulence and describe the structure of turbulence and the relations between energy and bulk variables, and to estimate the flux of one element from the measured fl of another by using exchange coefficients. It is shown that mean wind speed, energy s and heat flux are all positively correlated. Also eddies between 2½ min and 17 min pro most of the stress and heat flux. Effect of stability and wind direction is also shown. clusion is that observations at 10 second intervals are close enough to estimate Reynolds at 100 m on a sunny day. On windy overcast days every 3⅓ sec, and at night much frequently. For high frequency energy calculations 20% is omitted if observations are 10 sec apart. For kinetic energy estimates one hour is a long enough period but for and momentum flux a longer period, or better, several stations, are needed. *Subject Hea* **1. Micrometeorological observations 2. Turbulence calculations 3. Vertical eddy 4. Kinetic energy 5. Brookhaven, N. Y. I. Pennsylvania. State College. Minera dustries Experiment Station II. Contract AF 19(604)-166.**—*M.R.*

5.9–186 551.551:55

Panofsky, H. A. (*New York Univ.*) and McCormick, R. A. (*U. S. Weather Bu* **The vertical momentum flux at Brookhaven at 109 meters.** *U. S. Air Force. Cam Research Center, Geophysical Research Papers*, No. 19:219–230, Dec. **1952.** fig., tables, 9 eqs. **DWB**—A spectral analysis of vertical kinetic energy and stress under superadi conditions, made on the basis of measurements at the Brookhaven National Laboratory slow response instruments. A working hypothesis is set up, explaining why the max contribution to the kinetic energy occurs at much lower periods than the maximum tribution to the stress. *Subject Headings:* **1. Turbulence spectrum 2. Turbulence me ments. I. U. S. Brookhaven National Laboratory.**—*A.A.*

5.9–187 551.551:5

Sinha, K. L., **Evidence of clear-air turbulence.** *Weather*, 9(1): 3–8, Jan. **1954.** plate, 3 tables, 8 refs. **MH-BH**—After describing evidence of clear-air high-level turb

n Dines meteorograph records, statistical results at Agra, India, are summarized. Four els are found, about 800, 500, 200 and 75 mb, with annual variations. Their significance liscussed. *Subject Heading:* **1. Clear air turbulence.**—*C.E.P.B.*

5.9–188 551.551.7:551.576.11

Brandtner, Erwin and Faust, Heinrich, **Schwingungen an einem scharfen Wolkenrand.** scillations at a sharp cloud edge.] *Meteorologische Rundschau*, 5(5/6):106–107, May/ ne, **1952.** 4 figs. **MH-BH**—Jan. 5, 1950, a thick stratus wall over Bad Kissingen de- oped on its upper edge sinusoidal protuberances 200 m across and 500–600 m apart, life min. Some developed into independent round clouds. They were due to harmonic illations at an inversion. *Subject Headings:* **1. Upper air turbulence 2. Cloud modification.** *C.E.P.B.*

5.9–189 551.552(768)

Gifford, Frank, Jr. (*U. S. W. B., Wash., D. C.*), **A study of low level air trajectories at k Ridge, Tenn.** *Monthly Weather Review*, 81(7):179–192, July **1953.** 13 figs., 11 refs. **H-BH**—Low level air trajectories over hilly terrain are analyzed by means of 2000 zero-lift, uble-theodolite balloon observations. The eddy patterns are explained showing character- c horizontal and vertical trajectories, Lagrangian autocorrelation functions, vertical cross tions of observed vertical velocities and their frequency distribution. The turbulence pe depends on the low level thermal stability. *Subject Headings:* **1. Air trajectories 2. Oro- phic turbulence 3. Oak Ridge, Tenn.**—*A.A.*

5.9–190 551.552:629.13

Harley, D. G., **Equivalent tail-winds on the Shannon to Gander route.** *Institute of vigation, London, Journal*, 7(1):16–27, Jan. **1954.** 4 figs., 5 tables, 2 refs. Discussion 43–48. **DLC**—Tail wind components (ETW, including adverse effects of beam winds) 700 and 500 mb charts 1949–53 are represented by seasonal means and S.D.s and monthly remes. Means and S.D.s of errors in forecast ETW are set out and discussed. Forecasts ng standard thickness pattern are more accurate than those using the latest actual winds regression equations based on them. *Subject Headings:* **1. Aeronautical meteorology Equivalent tail winds.**—*C.E.P.B.*

5.9–191 551.552(453.33)

Polli, Silvio, **Il vento sull'altipiano Carsico di Trieste.** [Winds on the Carso plateau in ieste.] *Annali di Geofisica*, 6(2):285–294, April **1953.** 12 tables, 3 refs. English summary 293. **MH-BH**—Results of five years' anemometric measurements (1948–1952) carried t in Opicina and Basovizza (Carso, Trieste) are presented and compared with data for ieste. The regime of bora is clearly brought into evidence. Results of the comparison licate that winds are less intense and less turbulent on the Carso than near the sea. A neral view held to the contrary effect thereby appears to be refuted. *Subject Headings:* **Wind regime 2. Trieste.**—*Author's abstract.*

WIND VARIATIONS AND VERTICAL DISTRIBUTION

See also: **Unusual stroms in 2 districts of Central Asia** (Obruchev), 5.9–197.

5.9–192 551 553.11

Yamashita, R., **On 'Land and sea breezes.'** *Meteorological Society of Japan, Journal*, (5):157–172, May **1953.** 5 figs., 2 tables, 46 eqs. In English. **MH-BH**—Author sets t and solves equations of motion for the sea breeze vector on a straight coast with a given mperature deviation. Inserting numerical values for the constants (lat. 45°) the solution es ellipses described by wind vectors at different heights from ground to 4 km. The cal- lations are repeated for different latitude, viscosity given in cylindrical coordinates for a cular island. *Subject Heading:* **1. Land and sea breeze theory.**—*C.E.P.B.*

5.9–193 551.553.21:551.577.3

Chelam, E. V. (*Reg. Met. Center, Colaba, Bombay*), **Synoptic aspects of the monsoon cir- lation and rainfall over Indo-Pakistan.** *Indian Journal of Meteorology and Geophysics,*

4(3):264–265, July **1953.** ref. **MH-BH**—A note refuting the idea expressed by RAHMATULLAH (*J. Met.*, 9(3), 1952) that these conclusions regarding the unsteady pattern of precipitation over India and Pakistan were at variance with the conventional ideas of a steady monsoon condition. C. W. B. NORMAND in *"The Weather of India"* (1937) expressed the then current recognition of the pulsatory nature of monsoon rains connected with changes in the axis of the North Indian trough. Notes are given regarding 1949 monsoon weather "Types" according to RAHMATULLAH's classification (*see item* 4.2–166, Feb. 1953, *MA*). *Subject Headings:* **1. Monsoon circulation 2. Monsoon rains 3. India.**—*M.R.*

5.9–194 551.553.6:51

Wadsworth, J., **Frequency distribution of wind speeds.** *Meteorological Magazine*, Lond 83(981):92–93, March **1954.** fig., table, 3 refs. **MH-BH**—L. JACOBS in an unpublished pa expresses percentage frequency n of winds exceeding speed v by $\log_e n_e = a - bv^2$. WADSWO found that this holds for Kabete, Uganda, 1500 winds but not for 0900 winds and sugg that JACOBS' law is only valid in conditions of turbulent motion. *Subject Headings:* **1. W frequencies 2. Statistical studies. I. Jacobs, L.**—*C.E.P.B.*

5.9–195 551

Ishida, T., **Vertical change of wind direction.** *Journal of Meteorological Research*, To 4(12):1013–1015, March **1953.** 2 figs., 4 refs., eq. In Japanese; English summary p. **MH-BH**—Observations on wireless tower 312 m. high at Kawaguchi are used to investi variation of wind with height. At 300 m surface friction introduces a veer of about Coefficient of eddy viscosity and height of frictional layer are calculated as 4.8×10^4 cm and 1015 m. *Subject Headings:* **1. Wind profiles 2. Japan.**—*C.E.P.B.*

5.9–196 551.554:551.5

Marshall, W. A. L., **Comparison of the wind recorded by anemograph with the geostro wind.** *Great Britain. Meteorological Office, Professional Notes*, 7(108), **1954.** 26 p. 12 17 tables. M.O. 524h. **GB-MO**—Pressure-tube anemograph winds at Stornoway, Bell R Scilly and Kew are compared with geostrophic winds. Average ratios ranged from 67– at ocean stations to 36% at Kew, but varied with wind direction, time of day (in winter) season. Over open sea ratio was related to curvature of isobars. Abnormally large r were associated with unstable temperature lapse and abnormally small ratios with inver or lee effects. *Subject Headings.* **1. Geostrophic winds 2. Wind gradient.**—*C.E.P.B.*

SPECIAL WINDS

5.9–197 551.555:551.553.12

Obruchev, V. A., **Zametki o dvukh raĭonakh neobychaĭnykh bur' v Tsentral'noĭ** [Notes on unusual storms in two districts of Central Asia.] (In: Leonov, A. K. (*ed.*), **Pa IUlia Mikhaĭlovicha SHokal'skogo.** [In memory of Iuliĭ Mikhaĭlovich SHokal'skiĭ.] cow, **1950.** p. 7–25. 2 figs., 15 refs.) **DLC**—Report on violent local wind storms occu frequently in the winter between the Altaĭ and Tien Shan Mountains, the "Door to C and at the eastern end of the Tien Shan Mountain in the "Valley of the Demons." topographical conditions are outlined and reports of travellers summarized. The estab ment of meteorological stations is suggested at those places, which are covered by skel of men and animals killed by the storms. *Subject Headings:* **1. Local winds 2. Mou winds 3. Tien Shan Mountains, U.S.S.R.**—*A.A.*

5.9–198 551.555.

*Hentschel, Gerhard, **Das Föhngebiet des Harzes.** [The föhn area of the Harz.] *many. Deutsche Demokratische Republik, Meteorologischer und Hydrologischer Dienst handlungen*, 3(23), **1953.** 57 p. 14 figs., 18 tables, 25 refs. **DWB**—The area conside the NE margin of the Harz Mountains in which most of the winds are föhn-like cur relatively warm and dry, with good visibility and little cloud. The considerable local ences are attributed to lee whirls with horizontal axis behind ridges across the wind g strong squally winds, and whirls with vertical axis in valleys parallel to the wind g

bazagotl cloud whirls. In summer föhn only occurs at night after cold air inflows; in winter is most frequent with nocturnal slope winds in anticyclonic inversions. The climatic and bclimatic effects of cold air inbreaks and fluctuations of temperature and relative humidity e discussed. *Subject Headings:* **1. Föhn winds 2. Harz Mountains, Germany.**—*C.E.P.B.*

5.9–199 551.555.6:551.509.3

§Yasui, H., **The mechanism of the outbreak of cold wave and its forecasting.** *Journal Meteorological Research,* Tokyo, 4(12):1003–1011, March **1953.** 11 figs., 2 refs. In Japese; English summary p. 61. **MH-BH**—Cold air outbreak of Jan. 17–21, 1951, in E. Asia studied on surface and 500 mb charts. It is represented by superposition of long and short ves travelling E; lowest temperatures occur with passage of upper trough. Outbreak ffers from N. American cold waves in reaching sea more rapidly and undergoing greater bdification. The analysis is a useful basis for forecasting winter showers in Noobi plain. *bject Headings:* **1. Cold wave forecasting 2. East Asia.**—*C.E.P.B.*

WIND EFFECTS

See also: **Tropical revolving- and wind-storms insurance** (Hart), 5.9–138; **Storm protecting lab. for testing different materials under hurricane conditions** (Polovkas, Thompson), 5.9–141.

5.9–200 551.556:551.521.2

Gossard, Earl E. (*U. S. Navy Electronics Lab., San Diego, Calif.*), **The effect of wind on ghttime radiational cooling.** *American Geophysical Union, Transactions,* 34(6):841–848, ec. **1953.** 4 figs., 2 tables, 11 refs., 14 eqs. **MH-BH**—Results obtained by Brunt, Frost, EGER, and Knighting are briefly reviewed, and it is shown that the exact results of Jaeger d Knighting are closely duplicated by a much simpler expression obtained primarily rough use of two simplifying assumptions: 1) A finite depth of modification of the lower yers of the atmosphere is assumed which increases through the night and below which heat x is constant with height. 2) Starting at sunset, the diffusive flux of heat from the soil and om the lower atmosphere is constant through the night. The expression is compared with perimental data obtained by the University of Texas, and it is found to yield results which ree well with observation in the absence of such complicating factors as cloudiness and ndensation. *Subject Headings:* **1. Nocturnal cooling 2. Wind effects 3. Heat diffusion.**—*uthor's abstract.*

5.9–201 551.556:551.465(269)

Hidaka, Koji and Tsuchiya, Mizuki, **On the Antarctic circumpolar current.** *Journal of arine Research,* 12(2):214–222, Dec. 1, **1953.** 2 figs., 2 tables, 5 refs., 17 eqs. **DLC**—In 51 Munk and Palmén discussed the dynamics of the Antarctic Circumpolar Current and nd that they could explain the total mass transport of this current by assuming a far larger lue for the coefficient of lateral mixing than had been obtained for other parts of the oceans. n attempt to solve the same problem in terms of the current velocity itself reveals that the pe of the sea surface and the vertical distribution of current velocity could be satisfactorily plained if the very high value which had been anticipated by Munk and Palmén were sumed for the lateral mixing coefficient. It was found also that the distributions of surface pe and velocity are not practically influenced by lateral mixing and are inconsistent with tual observations so long as the coefficient of lateral mixing remains less than 10^8 g cm^{-1} sec^{-1}. *bject Headings:* **1. Wind effects 2. Ocean currents 3. Antarctica.**—*Authors' abstract.*

5.9–202 551.556:551.515.2:69

Saffir, Herbert S. (*Asst. County Engr., Dade County, Miami, Florida*), **The effects on uctures of winds of hurricane force.** *American Society of Civil Engineers, New York, oceedings,* Vol. 79, Separate No. 206, July **1953.** 19 p. 18 figs., 2 tables. **DLC**—The mage caused by the hurricanes that struck Florida in 1950, 1926, 1945, 1947 and 1948 are scribed in detail, the chronologies of hurricanes from 1926 to 1950 including their total mber, number reaching the U. S. coast and the damage caused are listed, and the wind

velocities during hurricanes are discussed. The various wind loading specifications in Florida building codes are mentioned and methods for obtaining data for wind pressu on structures are cited. *Subject Headings:* **1. Wind load on structures 2. Hurricane dam 3. Architectural meteorology 4. Wind pressure 5. Florida.**—*I.L.D.*

UPPER AIR WINDS

See also: **Zonal circulation** (Ishimaru), 5.9–127; **Wind and temp. over Japan and adjacent waters winter 1950–51** (Mohri), 5.9–131; **Investigations of turbulence** (Jones), 5.9–187; **A study of dynamic climatology** (Kubota), 5.9–298.

5.9–203 551.557:551.576.5:62

Frost, Bernard C., **Flying in jet stream winds.** *Shell Aviation News*, London, No. 186: **1953.** 10 figs. **DLC**—An airplane captain discusses jet stream from flying point of v Clouds and air temperature are valuable guides to identifying jet. Two maps of a jet Atlantic are given. *Subject Headings:* **1. Jet stream 2. Optimum flight paths.**—*C.E.P.B*

5.9–204 551.557:551

Murakami, T. (*Central Meteorological Obs., Tokyo*), **On the seasonal variation of u flow patterns. Part 1. From winter to spring.** *Meteorological Society of Japan, Jou* 31(5):173–193, May **1953.** 10 figs., 7 refs. In English. **MH-BH**—Examination of 5 means of height of 500 mb surface 10–80°N over hemisphere from Feb. through May sh that in Far East the jet is stationary about 30°N until end of March, breaking down in stages in early April and mid-May with the appearance of a secondary jet in 55°N (sh by profiles, time sections and continuity charts). A long-period disturbance is postulate the change, showing two types, B March 8–12 and April 12–16, S Feb. 21–25, April 2–6, 12–16, giving loops over continental margins. The mean 500 mb charts for B and S types changes B–S and S–B are shown on hemisphere charts. The mechanism of these chang discussed. *Subject Headings:* **1. Zonal circulation 2. Jet stream.**—*C.E.P.B.*

5.9–205 551.557:551.576.1:551.

Schaefer, Vincent J., **The use of clouds for locating the jet stream.** *Aeroplane*, Lo 85(2206):599–602, Oct. 30, **1953.** 15 figs., ref. **GB-MO**—Popular account with color p of types of cloud associated with jet-stream axis and notes on how to establish its close imity, based on time-lapse photography. *Subject Headings:* **1. Jet stream 2. Jet st clouds.**—*C.E.P.B.*

5.9–206 551.557.2(56

Bannon, J. K., **Note on the structure of the high altitude strong-wind belt in the M East in winter.** *Royal Meteorological Society, Quarterly Journal*, 80(344):218–221, April 3 figs., 7 refs. **MH-BH**—Same as *Great Britain. Meteorological Research Committee, M* 821, 1953 (*see* 5.2–180, Feb. 1954, *MAB*). *Subject Headings:* **1. Upper air wind vari 2. Iraq.**—*C.E.P.B.*

5.9–207 551.557.2:55

Jenkinson, A. F., **Upper winds from nephoscope observations.** *Meteorological Ma* London, 83(984):174–175, June **1954.** 2 figs., 7 refs. **MH-BH**—A map of isotachs and lines for Northern Hemisphere (100°W–60°E) Dec.–Feb. drawn from nephoscope obser at cirrus level, is compared with one drawn from 300 mb levels for January, to show of cloud observations. *Subject Headings:* **1. Cloud movement 2. Upper air wind ch** *C.E.P.B.*

5.9–208 551.557.2:55

Narikawa, J., **Air currents at cirrus-level.** *Journal of Meteorological Research*, 4(9):699–703, Feb. **1953.** 7 figs., 4 refs. In Japanese; English summary p. (43). **MH** From aerological data for Japan and observations of upper level clouds it is found tha are north-westerly currents in the forward of a cyclone at cirrus level, and south-w currents in the forward of an anticyclone. The course of typhoons can be estimated

tain accuracy from the motion of cirrus clouds. *Subject Headings:* **1. Upper level cloud servation 2. Upper air circulation.**—*Author's abstract.*

VERTICAL CURRENTS

See: **Introduction to climate** (Threwartha), 5.9–12; **Cold front passing over mountainous central part of Japan** (Nakayama), 5.9–145.

AQUEOUS VAPOR HYDROMETEORS AND HYDROMETEOROLOGY

HUMIDITY AND EVAPORATION

See also: **Measurm. of humidity** (Gr. Br. Nation. Phys. Lab.), 5.9–58; **Measurement of humidity with rolled hair** (Schulze), 5.9–61; **Daytime partition of irradiation of the evapor. chilling of the ground** (Brooks, Rhoades), 5.9–170; **Inter-relation of surface and ground water** (Khosla), 5.9–253.

5.9–209 551.571:551.573

*Benton, George S., Estoque, Mariano A., and Dominitz, Jack, **Evaluation of the water por balance of the North American Continent.** Johns Hopkins Univ. Dept. of Civil gineering, Contract AF(122)-365, Scientific Report, No. 1, July **1953.** 101 p. 30 figs., bles, numerous charts, refs. **DWB**—Integrating the product mixing ratio times the merid- ial or zonal component of the geostrophic wind from the surface up to 400 mb for each ent made during 1949 at 30 radiosonde stations distributed over North America, the mean ter vapor transfer was computed and is shown on charts for each month, season and the ar. The continent loses water vapor mainly over the Atlantic and Labrador coast in each son. The total gain for all boundaries is negative in summer. The evapotranspiration s found for each month, by computing the convergence of water vapor by line integration for e continent and separately for Canada and the Central United States, and combining their lues with the measured precipitation. The result agrees quite well with the annual evapo- nspiration value, computed from the basic hydrologic equation, and its annual course cor- ponds to the monthly evapotranspiration values according to THORNTHWAITE's method, with exception that the latter method consistently gives too low values for the winter months. eridional and zonal cross sections show the vertical distribution of water vapor transfer. *bject Headings:* **1. Water vapor transport 2. Hydrologic cycle 3. Evapotranspiration Thornthwaite's method 5. North America. I. Johns Hopkins Univ. Dept. of Civil gineering II. Contract AF(122)-356.**—*A.A.*

5.9–210 551.571:551.501.45

Sasaki, K., **On the effective humidity.** *Journal of Meteorological Research,* Tokyo, 11):937–940, Feb. **1953.** 5 figs., table, 3 eqs. In Japanese; English summary p. 58. **MH-I**—An equation is found for calculating "effective humidity" taking account of observed lues of R.H. on day in question and preceding days and correlation between values on ccessive days. The preceding 9 days suffice to give a good value. *Subject Heading:* **1. Hu- dity calculations.**—*C.E.P.B.*

5.9–211 551.571:551.510.534

Vassy, Etienne (*Prof. at Faculté des Sciences, Paris*), **Quelques apports de la physique de tmosphère à la météorologie.** [Contributions of physics of the atmosphere to meteorology.] *athematical and Physical Society of Egypt, Cairo, Proceedings,* 4(3):7–15, **1951.** 9 figs., refs. Abstracted from reprint. **DWB**—Elementary discussion. Author compared ecipitable water content measured directly with radiosonde data and gives a general summary the vertical, seasonal and geographical distribution of ozone. Attempts to explain ad- ctive processes in ozone layer. *Subject Headings:* **1. Precipitable water 2. Ozone dis- bution.**—*A.A.*

5.9–212 551.5

Bunker, Andrew F. (*Woods Hole Oceanographic Inst., Woods Hole, Mass.*), **On the termination of moisture gradients from radiosonde records.** *American Meteorological Soc Bulletin*, 34(9):406–409, Nov. **1953.** 2 figs., table, 2 refs., 2 eqs. **MH-BH.** Also in: W Hole Oceanographic Institution, Contract N6onr-27702, Marine Meteorology, Techr Report No. 17, Feb. **1952. DWB**—The humidity indicated by the rapidly rising radios lags behind the true humidity of the air, making moisture gradient determinations uncer by a factor of 4. Application of isothermal laboratory determinations of the lag to the reac may be misleading because the radiosonde, in rising through the atmosphere, usually pa from warm air to cooler air. The lag of the strip may be quite different under these circ stances. By comparison of radiosonde reports with airplane humidity soundings, it is f that in the case of the radiosonde moving from warm, dry air (about −5°C) to cooler, mo air (about −18°C) the lag may increase to 165 seconds. When it passes to cooler, drie the lag decreases to 10 to 20 seconds. Using these lags and assuming an exponential appr to the final value, more nearly correct values of the humidity at particular heights ca computed from the radiosonde records. *Subject Headings:* **1. Humidity gradient calcula 2. Radiosonde data. I. Woods Hole Oceanographic Institution II. Contract N6onr-2** —*Author's abstract.*

5.9–213 551.573 551.579.4:551.

Bonython, C. Warren and Mason, B., **The filling and drying of Lake Eyre.** *Geogra Journal*, 119(3):321–330, Sept. **1953.** 3 figs., 2 tables, 3 photos. **DLC**—Owing to abn rains in N. and E. Australia in summer 1949–50 Lake Eyre North (3000 sq mi) was subme Monthly rainfalls 1949–50 tabulated. Former floodings are listed. Drying up was com by beginning of 1953. Levels were measured during 1951: evaporation calculated inches, compared with 80 inches calculated from energy balance. *Subject Headings:* **1. V level variations 2. Evaporation 3. Lake Eyre, Australia.**—*C.E.P.B.*

5.9–214 55

*Langbein, Walter B. (*U. S. Geologic Survey*), **Research on evaporation from lake reservoirs.** *I.U.G.G. International Association of Hydrology, Brussels*, 1951, [*Transac* 3:409–425, **1952.** tables, 19 refs. **DWB**—Review on the state of evaporation resear open water surfaces. Annual evaporation data computed from the water balance are for 12 lakes in U. S., as well as monthly data for Lake Okeechobee, Florida. Other me discussed are the salt budget, heat energy budget, mass transfer and the climatological m Literature on the reduction coefficients for pan evaporimeters is shortly summarized. brating the discharge for a gage station below a proposed dam site, the net evaporation the newly constructed reservoir can be computed. *Subject Headings:* **1. Evaporation lakes 2. Evaporation research 3. Evaporation pans.**—*A.A.*

CONDENSATION NUCLEI

See also: **Rainfall from warm clouds** (Mordy, Eber), 5.9–8; **Alaskan ice—fog particles** (Thuman, Robinson), 5.9–11; **Collection and absorption of fog particles** (Kamiyama Moriguchi), 5.9–74; **Recent advances in science** (Ludlam), 5.9–100.

5.9–215 55

Best, A. C., **Dimensionless equations for the growth of a drop of salt solution.** *Meteorological Society, Quarterly Journal*, 80(343):89–93, Jan. **1954.** fig., 2 tables, 14 eqs. **DWB**—Equation for transfer of heat and water vapor to and from a drop solution in the atmosphere is laborious to solve. Values of parameters are calcul functions of temperature and an approximate equation is found relating ambient saturation to drop radius. This is integrated graphically and a table is given by wh rate of growth of a droplet can be calculated. *Subject Headings:* **1. Saline nuclei growth theory.**—*C.E.P.B.*

5.9–216 551.574.1

Keith, C. H. and Arons, A. B., **The growth of sea-salt particles by condensation of atmospheric water vapor.** *Journal of Meteorology*, 11(3):173–184, June **1954.** 9 figs., 3 tables, refs., 21 eqs. Also in: Woods Hole Oceanographic Institution, Contract Nonr-798(00) NR-085-001), Technical Report, No. 5, June **1953. DWB, MH-BH**—Equations of change state of small particles of sea salt in air of 80–100% R.H. are set out. For particles of 10^{-9} 2×10^{-8} gm time of growth to a saturated solution at 25°C is given by eq. (20) and expressed a table and graph. An expression (17) is found for the change of concentration ("scaled dius," cm/gm$^{1/3}$). A setup is described for measuring growth rates at different σ sand hu-idities. The experimental results agreed with the formulas derived. The growth equation integrated for rates of lift and variable temperatures and humidities. The curves obtained ace the growth of salt particles from the sea to cloud base. *Subject Heading:* **1. Saline nuclei Drop growth theory. I. Woods Hole Oceanographic Institution II. Contract Nonr-798(00).** *C.E.P.B.*

5.9–217 551.574.1

Mahrous, M. A., **Drop sizes in sea mists.** *Royal Meteorological Society, Quarterly Journal*, (343):99–101, Jan. **1954.** fig., table, 8 refs. **DWB**—Drop sizes in "haar" on NE coast of ngland were measured and tabulated in relation to time, humidity, wind and visual range. ean diameter increases (from about 20–60μ) in 2½ hrs with aging of fog. TRABERT's law visual range is not confirmed. *Subject Headings:* **1. Drop size distribution 2. Haar.**— *E.P.B.*

5.9–218 551.508.91:551.501

Hosler, Charles L., Burkhart, Marvin D. and Neuberger, Hans (*State College, Penna.*), **n the effect of time lapse between sampling and expansion in the Aitken nuclei counter.** *merican Meteorological Society, Bulletin*, 33(6):251–254, June **1952.** fig., table, 8 refs. **H-BH**—Previous and more recent comparisons of electromicroscopic and conventional iclei counts show that the Aitken counts are deficient. Special experiments revealed that the use for this deficiency lies in the rapid decay of nuclei in the time lapse between sampling d counting nuclei. It was found that a lapse of 30 seconds reduces the nuclei concentration the counter by roughly 50%. When this decay is considered, the Aitken and electron icroscopic counts can be brought into good agreement. *Subject Headings:* **1. Electron microopes 2. Nuclei counts 3. Aitken counter.**—*Authors' abstract.*

5.9–219 551.574.1:551.508.91

Moore, D. J., **The reliability of nucleus concentrations as measured by an Aitken counter.** *merican Meteorological Society, Bulletin*, 34(9):410–412, Nov. **1953.** 2 figs., table, ref. eply by Hosler, C. L., *ibid.*, 35(3):133, March **1954. MH-BH**—HOSLER, BURKHART and EUBERGER found that the number of nuclei deduced from electron microscope examinations a collodion film exposed on the stage of an Aitken counter gave concentrations up to five nes as large as those observed by the normal visual method. They attributed the disepancy to sedimentation of nuclei during the interval between sampling and expansion and evaporation of drops before they reached the stage. These effects have been examined by mparing the visual counts with the number of craters on magnesium oxide coated surfaces posed on the stage of the counter. It appears that sedimentation leads to losses of only 10 15 per cent of the nucleus population if the standard instructions for the use of the counter e followed. The high counts observed by Hosler and others with the electron microscope are tributed to nuclei falling on the stage before and during the cleaning process which precedes lmission of the sample. *Subject Headings:* **1. Nuclei counts 2. Aitken counter 3. Electron icroscopes. I. Hosler, C. L.**—*Author's abstract.*

FOG

5.9–220 551.575:551.521.3

*Ishii, Yukio, **Results of the captive radiosonde observation.** *Tokyo. Forest Experiment ation, Bulletin*, No. 64:15–17, Oct. **1953.** 3 figs. In Japanese; English summary p. 17.

DWB—The vertical distribution of temperature and its minute variation in fog layers
observed on the Akkeshi coastal terrace by captive radiosonde. Observed data are sh
in the figures of temperature isopleths. Observation on 5th August shows remarkable incr
of temperature (as much as 7°C) at the top of the fog layer after sunrise. Such an ex
ordinary temperature rise may be caused by absorption of direct and reflected solar radia
because the air just above the fog layer seems to be almost saturated, containing abun
vapour from the evaporation from the underlying fog layer, and is favourable to ab
radiation. Thus it is pointed out that solar radiation received at the upper surface of
layers, which was often disregarded in previous investigations, plays an important role
regard to fog dissipation. *Subject Headings:* **1. Fog observation 2. Radiosonde observat
3. Absorption by water vapor 4. Fog dissipation 5. Akkeshi, Japan.**—*Author's abstract.*

5.9–221 551.5

Appleman, H. (*Hqs., Air Weather Service, Wash., D. C.*), **The cause and forecastin
ice fogs.** *American Meteorological Society, Bulletin*, 34(9):397–400, Nov. **1953.** 2
4 refs. **MH-BH**—Studies carried out in Alaska and Canada have shown that fog is a relat
rare phenomenon at temperatures between 0° and −30°F, with a minimum frequency bet
−20° and −30°. At still lower temperatures, however, the frequency of fog increases rap
This effect is noted only in the immediate vicinity of inhabited areas, such as towns and
fields. The reason for the sudden increase in fog frequency at these temperatures, and
rarity or lack of fog at the higher temperatures, has not been heretofore explained.
recent study on aircraft condensation trails, it was shown that if the temperature is sufficie
low (between −20 and −40°F, depending on the relative humidity), the burning of h
carbon fuels, such as would occur in towns and at airfields, easily results in supersatur
of the air and a "surface contrail" or ice fog. At higher temperatures, on the other h
combustion actually reduces the relative humidity of the atmosphere, hindering the form
of fog. In this paper it is shown that low-temperature (ice) fogs form as a result of the
bustion process, and curves are presented showing the temperature-dew-point relatio
necessary for the formation of such fogs. *Subject Headings:* **1. Ice fog formation 2. Ic
forecasting 3. Condensation trails 4. Low temperature fog formation.**—*Author's abstra*

5.9–222 551.575.3:551.509.5(52

Ibaragi, T., **A note on the forecast of fog occurrence.** *Journal of Meteorological Res*
Tokyo, 5(3):185–188, March **1953.** 3 figs., 4 tables. In Japanese; English summary p
MH-BH—According to data of the last 10 years, the years of low sea water temper
coincide with the years of large number of fog days in summer, which shows that summ
in the neighborhood of Chōshi City is influenced by the cold sea current flowing alon
nearby coast. The difference between dew-point temperature on land, and sea water
perature along the coast is applied to the forecast of fog occurrence. In doing so the pr
pattern is also considered. *Subject Headings:* **1. Fog forecasting 2. Objective forecasti**
From author's abstract.

5.9–223 551

Boljahn, G. and Rodewald, M., **Der unvorhergesehene Nebeleinbruch bei Cux
vom 9.8.53.** [The unexpected fog at Cuxhaven, 8/9/53.] *Wetterlotse*, No. 63/64:21
Nov./Dec. **1953.** fig. **DWB**—A northwesterly current turning to northerly reache
coast in the evening and brought dense fog which caused confusion. Air temperature
points, water temperatures and isochrones of onset of fog are plotted and discussed.
Heading: **1. Sea fog.**—*C.E.P.B.*

5.9–224 551.575.5(421):

Corless, R., **The fog of December 1952.** *Weather*, 9(4):127–128, April **1954. MH-**
Unusually large death toll in London is attributed to increased density and greater a
age of population, crowding in public transport, great number of motor vehicles pro
CO_2 and CO, electrical generating stations and use of fuel emitting SO_2 and CO.
Headings: **1. Fog mortality 2. Great London fog—Dec. 1952 3. London.**—*C.E.P.B.*

CLOUDS

See also: **Comparison of attenuation of infrared and visible radiation by clouds** (Beardsley, Linton), 5.9–156; **Oscillations at a sharp cloud edge** (Bandtner, others), 5.9–188; **Flying in jet stream winds** (Frost), 5.9–203; **Use of clouds for locating jet stream** (Schaefer), 5.9–205; **Upper winds from nephoscope observations** (Jenkinson), 5.9–207; **Air currents at cirrus-level** (Narikawa), 5.9–208.

5.9–225 551.576.1:629.135.2

Bilancini, Raoul, **Contrails e distrails.** [Contrails and distrails.] *Rivista di Meteorologia eronautica*, Rome, 13(2/3):94–95, April/Sept. **1953. MH-BH**—Remarks on early observaons of "distrails" and later of "contrails" beginning in 1908 (Mt. Weather, Va.). Terms are efined and phenomenon explained. *Subject Headings:* **1. Condensation trails 2. Negative ondensation trails.**—*M.R.*

5.9–226 551.576.11:629.13

Ratcliffe, R. A. S., **Unusual condensation-trail phenomena at Cranwell.** *Meteorological Tagazine*, London, 83(983):152–153, May **1954.** 2 figs. **DWB**—Jan. 1, 1954, aircraft rming dense persistent condensation trails in clear air left clear lanes when they entered rrus. A parhelion on both contrail and cloud showed both were formed of ice crystals. is suggested that the water added by exhausts to the cloud caused growth and precipitation the ice crystals as virga, leaving a clear lane. *Subject Headings:* **1. Condensation trails Negative condensation trails.**—*C.E.P.B.*

5.9–227 551.576.4:551.591(469)

*Portugal. Serviço Meteorológico National, **Frequência do ocorrência de determinados lores da altura do tecto de núvenes e da visibilidade no aeroporto do Porto Pedras Rubras.** Frequency of occurrence of specified values of cloud ceiling and visibility at the Porto Pedras ubras Airport.] *Portugal. Serviço Meteorológico Nacional, RT* 129, MEM 26, May 25, **53.** 1 p. table. Also its: *Memorias*, v. 11, **1953. DWB**—Data for each month from larch 1948 through Dec. 1952 and 5 year averages for each month are given for Porto Pedras ubras Airport (41°N, 8°43'W). The frequencies of clouds ≤400 ft (122 m) and/or visibility 1500 m are based on 21,061 observations. *Subject Headings:* **1. Ceiling and visibility data Porto Airport, Portugal.**—*M.R.*

5.9–228 551.576.4:551.508.76

Saito, T., **On the difference between eye-observation and pilot balloon measurement of oud.** *Journal of Meteorological Research*, Tokyo, 4(9):695–697, Feb. **1953.** 5 figs. In apanese; English summary p. (43). **MH-BH**—The author investigates the difference etween eye-observation and pilot balloon measurement of clouds at Yonago. (1) When ouds are low the observer has a tendency to make estimates exceeding the actual height and ce versa. In other words, the observer sticks to mean cloud height. (2) In general, when ouds move at a very fast rate, the observer's estimates fall short of the actual height. (3) As rule, observers produce accurate estimates when clouds are between 1,500 and 2,000 m in eight. *Subject Heading:* **1. Cloud height estimates.**—*Author's abstract.*

PRECIPITATION

See also: **Radar echoes from precip.** (Jones), 5.9–39; **Rainfall observations, 1951** (Netherlands. Met. Inst.), 5.9–49; **Tropical revolving- and windstorms insurance** (Hart), 5.9–138; **Anomalies of temp and precip. in Vienna** (Schreyer), 5.9–167; **Monsoon circulation and rainfall over Indo-Pakistan** (Chelam), 5.9–193.

5.9–229 551.577(410)(058)

$British Rainfall 1951, 1952. Report on the distribution of rain in space and time over reat Britain and Northern Ireland during the year 1951 and 1952 as recorded by about 000 observers. London, H.M.S.O., 1953, 1954. 2 pieces. 207 p.+215 p. numerous maps id tables. M.O. 565, 576. **GB-MO**—These annual volumes include the usual features—

distribution of rain in time, days with rain; droughts and dry spells; rain spells and wet spe
duration of rainfall; heavy falls in short periods and in rainfall days; monthly, seasonal a
annual rainfall; evaporation and percolation; and tables of rainfall and raindays for ab
5000 stations, with normal values where available. The year 1951 as a whole had 125%
average (1881–1915) in England, 117% in Wales, 109% in Scotland and 102% in North
Ireland. Among the heavy falls noted in 1952 are 1.23 in. in 15 min, 1.73 in 25 min, 2.0
30 min. The greatest daily fall was 9.000 in. at Longstone Barrow, Devonshire, on Aug.
Subject Headings: **1. Rainfall data 2. Precipitation data 3. Annual meteorological repo
4. Great Britain 5. Ireland.**—*C.E.P.B.*

5.9–230 551.577(4

Howell, Wallace Egbert and Karapiperis, Photios P., **Interpretation of the rainfall clim
of Marathon, Greece.** *Akademia Athēnōn, Praktika*, 27:106–117, **1952.** 3 figs., table, 5 r
MH-BH—Classification of storm types: isolated Mediterranean cyclone, blocked Atla
cyclone, Middle-European trough, winter etesian, cold front passage, summer etesian
unclassified cases. Total rainfall, number of storms and average rain given for each type
season (period 1933–39) for Dakelia near Marathon. *Subject Headings:* **1. Rainfall 2. Ra
fall regime 3. Storm classification 4. Marathon, Greece.**—*A.A.*

5.9–231 551.577

*Krishnaswamy, K. R. (*Met. Office, Poona*), **A note on the intensity of rainfall at Mad
Indian Journal of Meteorology and Geophysics, 3(2):115–130, April **1952.** 3 figs., 10 tal
MH-BH—Results of rainfall observations made with a siphon rain-gage from 1932 to 1
presented and briefly discussed (number of rainy days and number of spells of rain, rain
duration, rainfall intensity). *Subject Headings:* **1. Rain intensities 2. Rainfall dura
3. Madras, India.**—*A.A.*

5.9–232 551.577(612):551.59

*Godoli, G., **Le piogge della Libia e l'atttività solare.** [Rainfall of Libya and solar
tivity.] *Annali di Geofisica*, 6(1):125–135, Jan. **1953.** 4 tables, 11 refs. English summ
p. 134. **DWB**—Results of a periodogram analysis of rainfall intensity and frequency an
solar activity during the last four solar cycles (1910–1950) are summed up in tables
explanatory comments. The rainfall data, obtained at 247 stations throughout Libya,
arranged according to a climatic classification of the stations. A close correlation is reve
between rainfall intensity and frequency and solar activity. *Subject Headings:* **1. Rai
data 2. Solar influences 3. Libya.**—*G.T.*

5.9–233 551.577:633.1

Dufresse, Marcel, **Considerations sur l'aridoculture au Maroc.** [Considerations
dry-land farming in Morocco.] *Cahiers de la Recherche Agronomique*, Rabat, No. 2:93–
1949. tables, photos., bibliog. p. 124–125. **DWB**—A long discussion of the causes of ari
the effect of percolation on retention of fertility, the effect of various intensities or amoun
rainfall on water utilization by crops (field capacity, etc.); means by which the farmer
make up for a deficiency of rainfall, applicability of methods used in Montana to condi
around Casablanca with respect to wheat growing. Data for Marrakech, Casablanca
Meknés are used in this study along with experiment station data for Tirs, Rabat, R
Hamri and R'mel. *Subject Headings:* **1. Effective precipitation 2. Aridity 3. Cli
analogs 4. Wheat cultivation 5. Morocco 6. Montana.**—*M.R.*

5.9–234 551.577:551.515.

J—, H. R., **Weather in Sierra Leone.** *Geographical Journal*, 120(1):124–127, M
1954. 2 figs., refs. **DLC**—A N–S vertical section representing annual march of we
types shows sloping ITF and 4 zones from Harmattan through dry SW regime, rainy
monsoon, to Little Dry Season in July and Aug. with trade wind inversion. Five reg
types are described and illustrated by maps of annual rainfall with monthly histograms.
highest annual average is 223 in. at Kongo Valley in Peninsular (319.19 in. in 1945). S
Headings: **1. Rainfall 2. Intertropical front 3. Sierra Leone.**—*C.E.P.B.*

5.9–235 551.577(798)

*Black, Robert F., **Precipitation at Barrow, Alaska, greater than recorded.** *American ophysical Union, Transactions*, 35(2):203–207, April **1954.** fig., 2 tables, 5 refs. Discussion Walter T. Wilson. **MH-BH**—During the winter of 1949–1950 data on depth and density snow on the ground near Barrow, Alaska, revealed two to four times as much water equiva- t as was recorded with the standard eight-inch precipitation gage of the U. S. Weather reau. Indirect evidence on summer precipitation supports the conclusion that precipitation greater than recorded. Wind effects are believed to be responsible for the difference in ter equivalents and for an annual efficiency of the gage of 25 to 50 pct. Total precipitation is may be more than 16 inches instead of about four inches as recorded. Other Arctic tions in windy areas doubtless are similarly affected. *Subject Headings:* **1. Precipitation a 2. Instrumental errors 3. Wind effects 4. Barrow, Alaska. I. Wilson, Walter T.** *Author's abstract.*

5.9–236 551.577:551.311.12

Finsterwalder, R., **Eishaushalt von Gletschern und Niederschläge in Gletschergebieten.** stimate of ice of glaciers and rainfall in glacial areas.] *Geologische Rundschau*, Stuttgart, (7/8):705–712, Sept. 10, **1952.** fig., 17 refs., 3 eqs. **DLC**—Photogrammetry now permits ıple rapid estimation of surface area and speed of glaciers. Using stream theory of viscous ids, depth of a glacier and amount of ice passing a given cross section can be calculated. king account of ablation, smoother values of precipitation on firn region can be calculated within 10–20%. The process is illustrated by cumulative curves of precipitation in Hann- er 1856–1939 but no actual figures of precipitation over a glacier are given. *Subject Heading:* **Precipitation over glaciers.**—*C.E.P.B.*

5.9–237 551.577:551.501.81

Langille, R. C.; Gunn, K. L. S. and Palmer, W. M., **Quantitative analysis of vertical ucture in precipitation.** *Canada. Defence Research Board. Radio Propagation Laboratory,* port No. 1, July 1, **1948.** 64 p. 34 figs., 21 refs. **DWB**—During the summer of 1947 wers and continuous rain were observed in vertical section by a ten centimeter Microwave ight Finder radar. Photographic records of these observations have been analyzed, lizing the close correlation between radar echo and mass of free rain water (M) per unit ume of atmosphere, previously established. The report provides sequences of the "M"- ıtoured vertical sections so obtained. The method of obtaining these sections is developed detail. (*See also* 2H–110, Aug. 1951, *MAB.*) *Subject Heading:* **1. Radar analysis of cipitation.**—*Authors' abstract.*

5.9–238 551.464:551.577

Lineĭkin, I. S., **Ob izmenenii solenosti poverkhnostnogo sloia moria pri vypadenii osad-** v. [Change of salinity in the surface layer of the sea during precipitation.] *Akademiia uk SSSR, Izvestiia, Ser. Geofizicheskaia*, No. 2:148–154, **1953.** table, 4 refs., 34 eqs. **DLC**— theoretical solution of the problem involving the change in the salinity of the sea along the tical produced by precipitation. The change in the salinity of the surface layer during cipitation can be determined by the equation:

$$S_0(t) = \sigma - \frac{1}{\sqrt{\pi k}} \int_0^t \frac{\frac{d}{d\tau}(\eta S_0)}{\sqrt{t-\tau}}\, d\tau$$

case of uniform precipitation this equation by the formula

$$\bar{S} = 1 - 2\lambda\sqrt{t} \qquad t < 1$$

$$\bar{S} = 1 - 2\lambda\sqrt{t} - \sqrt{t-1} \quad t > 1$$

time, S=salinity, $\sigma = \lim_{z \to \infty} S$, k=coefficient of vertical turbulent exchange, η=elevation of above vertical level, λ is a function of the duration and height of precipitation and of the

turbulent diffusion along the vertical. A comparison of calculated salinity with obse data in the Azores reveals the precision of the formula. *Subject Headings:* **1. Salinity 2. cipitation effects.**—*I.L.D.*

HYDROMETEORS

See also: **Snow and its metamorphism** (Bader, others), 5.9–2; **Generating level of snow** (Gunn, others), 5.9–38; **Drop size distribution and water content of natural clouds** (Keily), 5.9–68; **Ground temp.—thickness of snow cover** (Fukutomi), 5.9–171; **Temp. observation on a snow surface** (Nechaev), 5.9–172; **Natural radioactivity of rainfall** (Damon, Kuroda), 5.9–132.

5.9–239 551.5

Magono, Chōji, **On the shape of water drops falling in stagnant air.** *Journal of M ology*, 11(1):77–79, Feb. **1954.** 5 figs., 7 refs. **MH-BH**—Drops of 0.01% silver chl solution falling at terminal velocity were photographed by spark discharges once per 0.0 Fall velocity is plotted against drop diameter. Typical shapes are shown. Flatteni represented by minor/major diameter; ratio generally decreased with diameter but a few o were elongated vertically, probably on leaving tip of dropper. *Subject Headings:* **1. Rain shapes 2. Raindrop velocity.**—*C.E.P.B.*

5.9–240 551.

Friedrich, W., **Schneerollen.** [Snow rollers.] *Wetter und Leben*, 5(3/4):82–83, **1953. MH-BH**—A description of snow cylinders that were formed between Jan. 1 1953 in the area Stockerau-Hollabrun-Maissau-Manhartsberg. Their lengths ranged bet 20 and 80 cm and their diameters between 10 and 60 cm. Their formation is attribut wind velocity of 60–70 km/hr, loose and relatively dry snow and snow stratification. *S Headings:* **1. Snow rollers 2. Austria.**—*I.L.D.*

5.9–241 551.

Gressel, W., **Über das Auftreten von Schneerollen und Schneewalzen in Niederöster** [On the occurrence of snow rollers and snow cylinders in Lower Austria.] *Meteorolo Rundschau*, 6(5/6):94–96, May/June, **1953.** fig., 7 refs. **DWB**—On night of Jan. 1 1953, hundreds of snow rollers were formed on suitable slopes from loose new snow on a snow surface. Averaged 40 cm long and 20 cm diameter, tracks up to 34 m long. (snow rollers) have hollow axes, others (snow cylinders) have a nucleus of compacted Attributed to wind gusting to 80 km/hr; method of formation is discussed. *Subject He* **1. Snow rollers.**—*C.E.P.B.*

5.9–242 551

Bouchet, R., **Une averse de pluie melée de glaçons et accompagnée de tourbillons vertical violents le 20 octobre 1952, à la Pointe-Pescade (Alger).** [Torrential rain mixe icicles and accompanied by violent vertical eddies on Oct. 20, 1952, at Pointe Pescade, Alg *La Météorologie*, 4th Ser., No. 29:80–81, Jan.–March **1953.** French, English and Sp summary p. 80. **MH-BH**—Circumstances attending this unusual ice storm are descri detail. The excessive turbulence was orographic and the ice or sleet came from a th squall brought by cold air from the west. *Subject Headings:* **1. Sleet storms 2. Th squalls 3. Pointe Pescade, Algiers.**—*M.R.*

5.9–243 551.5

Jay, Lee A.; Hafer, F. and Wood, Willis A. (*U. S. Weather Bur., Wash., D. C.*), **Ope hailstone.** *Weatherwise*, 6(6):160–169, Dec. **1953.** illus. **MH-BH**—The intense th storm which occurred in the Washington, D. C., area and in nearby Maryland on M 1953, resulted in the greatest hailstorm and the most damage ever reported in the Stones $4\frac{1}{8}$ inches in diameter weighing as much as 7 oz were preserved in deep freeze box plaster replicas made by an involved process (using wax, dry ice and 2 plaster of Paris r for each stone). The structure of one stone was determined by slicing it in half. TH about $2\frac{1}{2}''$ was the classic onion structure, whereas the very irregular outer sphere consi

ar ice with long protuberances. Photographs show size and structure. *Subject Headings:* **Hail structure 2. Hailstone replicas 3. Hailstorm size 4. Hailstorms 5. Hailstorm, ashington, D. C. (May 26, 1953) 6. Washington, D. C.**—*M.R.*

5.9–244 551.578.7:629.135

Sansom, H. W., **Damage to aircraft by hailstones.** *Weather*, 9(4):125, April **1954. MH-H**—On Nov. 19, 1953 an aircraft flying 10–11,000 ft above M.S.L. (5–6000 ft above ground) mi SE of Kisumu, E. Africa, encountered hailstones of 1 in. diameter which smashed perspex rodome and did other damage. On entering a large CuNb cloud, aircraft was suddenly ed 2000 ft and continued to rise. *Subject Headings:* **1. Aircraft damage 2. Hail 3. East rica.**—*C.E.P.B.*

5.9–245 551.578.7

§*Thompson, James R. (*WBAS Inkster, Mich.*), **Hail storm, Detroit, Michigan, May 30, 53.** (Pub. at WBAS Inkster, Michigan, July 7, **1953?**) 3 p. charts. Typescript. **DWB** A series of 2-hourly synoptic charts illustrate conditions which accompanied the storms. ie storms occurred in cold air, rather than in the warm air ahead of the cold front as was the se with the Port Huron and Flint, Mich., tornadoes. Vertical velocities are computed and is assumed that 60–70 m.p.h. would be conservative assuming largest stones were agglom-ators formed during descent. *Subject Headings:* **1. Hailstorms 2. Synoptic studies Detroit, Mich.**—*M.R.*

5.9–246 551.578.71

List, R. and de Quervain, Marcel, **Zur Struktur von Hagelkörnern.** [The structure of il stones.] *Zeitschrift für angewandte Mathematik und Physik*, 4(6):492–496, Nov. 15, **1953.** figs., refs. English summary p. 496. **DLC**—During a thunderstorm in the area of Weiss-hjoch, hail stones were collected for crystallographic investigation. Thin sections cut out of veral specimens and inspected in polarized light reveal in all cases but one a polycrystalline ucture of the hail stones. The normal pattern of the sections consists in a number of small ystals forming likely the centre of growth and in an adjacent or surrounding group of larger ystals. *Subject Heading:* **1. Hail structure.**—*Authors' abstract.*

HYDROMETEOROLOGY

See also: **Hydrologic yearbook** (Italy, Hydrologic Off.), 5.9–45; **Photoelectric raindrop spectrometer** (Mason, Ramanadhan), 5.9–75; **Analysis of impactometer** (Smulovicz), 5.9–78; **Forecasting spring floods** (Gay), 5.9–85; **Influence of temp. and soil water content on seedling blight of maize** (Harper), 5.9–164; **Filling and drying of Lake Eyre** (Bonython, Mason), 5.9–213.

5.9–247 551.579

Gold, Ernest, **The relation between run-off and quarterly values of rainfall in the Thames lley.** *I.U.G.G. International Association of Scientific Hydrology, Brussels, 1951, Trans-ions*, 3:235–236, **1952.** tables. **DWB**—Runoff for each quarter of the year can be com-ted with great accuracy on the basis of multiple regression equations using rainfall in the me and the preceding 3–4 quarters. Study based on period 1906–49. Average annual lue of rainfall 29.1″, runoff 10.2″. *Subject Headings:* **1. Hydrologic cycle 2. Runoff fore-sting 3. Multiple regression techniques 4. Thames Catchment, England.**—*A.A.*

5.9–248 551.579:621.6(661)

Hiehle, Kurt, **Die Bewässerung des Sudans. Betrachtungen über die Gewinnung neuen bensraumes in Afrika.** [The irrigation of the Sudan. Remarks on winning new living ace in Africa.] *Petermanns Geographische Mitteilungen*, 97(4):268–273, **1953.** 15 figs., refs. **DLC**—Region considered is the 1000 km wide zone of steppe and savanna S. of hara, in the north of which desert is advancing southwards through human action and ssibly changes of climate (southward shift of caloric equator). Much of the available water lost by evaporation from swampland. Only artificial conservation can raise the level of

culture. Construction of dams and reservoirs as in Nile could make available much w which now runs to waste, and utilize ten times the area of the Nile valley. *Subject Headi* **1. Hydrology 2. Irrigation 3. Sudan.**—*C.E.P.B.*

5.9–249 551

Kaipiainen, Martti, **Lisiä ahvenanmeren hydrografiaan.** [On the hydrology of Å Sea.] *Terra*, Helsinki, 64(3):91–100, **1952.** 5 figs. English summary p. 100. **DLC**— results of a study on the exchange of water between the Baltic Sea and the Gulf of Bot which was carried out in July 1922 by Sweden and Finland in the vicinity of the Åland Isl are summarized. The height of water level in the Gulf of Bothnia was nearly opposite to southern Baltic with a correlation of −0.85 and −0.72 with the difference in atmosph pressure Vassa-Visby. The surface currents were caused generally by winds but in the Å Sea a rotating surface current that belonged from its period to the so-called slowness curr A nearly stationary bottom currrent from the Baltic to the Gulf of Bothnia prevails bel depth of 50–60 m. The velocity of the current which was about 23 cm/sec, 10–20 m from bottom showed considerable variation. The velocity of the current showed a correlatio about −0.75 with the Vassa-Visby pressure difference and a periodical variation of half a The amplitude was on the average about 2 cm/sec. Legends of the figures are in Eng Data are presented graphically and tabularly. *Subject Headings:* **1. Sea currents 2. drology 3. Åland Sea.**—*Based on author's abstract.*

5.9–250 55

*Kalweit, Heino and Kirsten, Manfred, **Durchschnittsverhalten und Schwanku bereich der Wasserhaushaltgrössen in Mitteldeutschland.** [The normal water balan central Germany and its variations.] *Wasserwirtschaft-Wassertechnik*, Berlin, 2(11):356– Nov. **1952.** 4 figs., 6 tables, 6 refs. **DLC**—Annual values of precipitation, runoff (*A*) water losses for 42 catchment areas, compared with the classical papers of KELLER and FISC show a greater increase of evapotranspiration (*V*) with precipitation than was assumed b A second degree polynomial gives an average error of 2.9% for *V* and 9.3% for *A*. Ext variations of the water balance terms are analyzed. Data and polynomial equation given also for winter and summer separately. *Subject Headings:* **1. Hydrologic cycle 2. C ment basins 3. Germany.**—*A.A.*

5.9–251 55

†*Karatekin, Nazmi, (*Turkish Ministry of Public Works, Water Div.*), **Hydrological res in the Middle East.** (In: UNESCO, **Reviews of Research on Arid Zone Hydrology.** p. 78–94. map (in pocket), tables, 116 refs.) **DWB**—The first comprehensive summa hydrologic data for the Middle East, especially Turkey. The following values are given large number of drainage basins; area, mean altitude of the basin, length of the basin an river, mean and extreme discharges, rainfall, runoff and evapotranspiration, etc. Limnol data are presented including evaporation for some lakes. A map shows the hydrologic of Turkey. A large number of Turkish papers are listed and some papers for Syria, Leb Israel and Iraq. *Subject Headings:* **1. Hydrologic bibliographies 2. Hydrologic data 3 zones 4. Turkey 5. Middle East.**—*A.A.*

5.9–252 55

†*Keller, Reiner (*Geogr. Inst., Univ. Bonn*), **Natur und Wirtschaft im Wasserhausha rheinischen Landschaften und Flussgebiete.** [Nature and economy in relation to th drology of the Rhine region and drainage basin.] *Forschungen zur Deutschen Landes* Remagen, v. 57, **1951.** 158 p. tables (some fold.), bibliog. p. 142–158, eqs. *Bonn. versität. Geographisches Institut, Arbeiten, Ser. A*, No. 20. **DWB**—An unorthodox ap to the problem of the water balance in one of the most industrialized areas of Europe. study covers West Germany from 49°45′N to 52°40′N and up to 8°20′E. Maps giv annual and summer areal precipitation, drainage basins and annual water use (*W*) of di crops, which was computed by the formula:

$$lgW = a + \frac{(lgF)^2}{1+lgF}[\text{mm}]$$

—green mass in gr m^{-2}, a—constant which depends on climatic conditions. Furthermore, tailed tables are given for precipitation and population in catchment areas, as well as the nual component of the water balance for selected areas in comparison to computed values, d the water use of industrial undertakings. Water use per capita depends on area of catch-ent. *Subject Headings:* **1. Hydrologic cycle 2. Evapotranspiration 3. Hydrologic charts Northwest Germany.**—*A.A.*

5.9–253 551.579:551.573

Khosla, A. N. (*Chairman, Indian Central Water and Power Commission*), **Inter-relation surface and ground water with special reference to arid zones.** *Irrigation and Power*, mla, 9(3):402–411, July **1952.** 3 figs., refs. **DWB**—The author applied his newly developed rmula for evapotranspiration losses from catchment areas, based on monthly temperatures *ee item* 4.3–230, March 1953, *MAB*), to the Kantli River, a typical desert stream with ground ater tables sloping away from the river. Evapotranspiration computed for one year from infall, runoff and ground water storage after the monsoon season, was in good agreement ith results computed by the author's formula. *Subject Headings:* **1. Hydrologic cycle Evapotranspiration 3. Kantli River 4. Rajasthan Desert, India.**—*A.A.*

5.9–254 551.579

Linsley, K. (*Stanford Univ.*), **The index concept in hydrology.** *I.U.G.G. International ssociation of Scientific Hydrology, Brussels, 1951, Transactions*, 1:261–265, **1952.** 4 figs., fs. **DWB**—Although usual precipitation data do not give the true precipitation over a tchment area in mountainous regions, they nevertheless can be used successfully as an index r the forecast of springtime runoff from melting snow. Snow surveys are more expensive, ıt do not improve considerably the accuracy of forecasts. *Subject Headings:* **1. Snow melt noff 2. Runoff forecasting 3. Snow surveys 4. United States.**—*A.A.*

5.9–255 551.579:551.585.55:016

†Linsley, Ray K. (*Stanford Univ.*), **Report on the hydrological problems of the arid and emi-arid areas of the United States and Canada.** (In: UNESCO, **Reviews of Research on rid Zone Hydrology. 1953.** p. 128–151. 424 refs.) **DWB**—An extensive critical literature view covering the hydrologic balance in arid regions, hydrometric measurements, areal recipitation and its variations, snow cover, runoff and its variations, ground water, evaporation om water and snow, transpiration and consumptive use, artificial precipitation and utilization sea water, watershed management, water conservation, water supply forecasts, erosion, il moisture, etc. The bibliography gives for each subject a representative cross section. *ubject Headings:* **1. Hydrologic bibliographies 2. Arid zones 3. Hydrologic cycle 4. United tates 5. Canada.**—*A.A.*

5.9–256 551.579:681.1

Linsley, R. K., Foskett, L. W. and Kohler, M. A., **Use of electrical analogy in flood wave nalysis.** *I.U.G.G. Association of Scientific Hydrology, Oslo, 1948*, [*Transactions*], 1:221–227, n.d.] 5 figs., 22 eqs. **DWB**—Since the analytical graphical computation of the deformation flood waves is time consuming, an electronic flood routing machine has been developed. is based on the equation $S=K[xI+(1-x)O]$, S—storage in the condenser, analogous storage in river, I—inflow, O—outflow, K and x—empirical constants, which must be etermined from observed hydrographs. Actual computation samples are shown. *Subject leadings:* **1. Flood routing machines 2. Flood wave analysis.**—*A.A.*

5.9–257 551.579 551.509.67

§Reichelderfer, Francis W. (*U. S. Weather Bur.*), **Physical basis of water supply for the nited States.** (In: U. S. Congress. House. Committee on Interior and Insular Affairs, **hysical and Economic Foundation of Natural Resources,** Vol. 2:11–14, **1952.** graphs, arts.) **DWB**—Meteorological aspects which are important for the evaluation of the hy-rologic cycle are summarized. The discussion is illustrated by maps (for the U. S.) of annual, inter, summer, Jan. and July precipitation, of minimum and maximum annual precipitation, nnual evaporation from free water surfaces and sample maps of single storms. The general

circulation is characterized by the normal pressure distribution over the Northern Hemisph in Jan. A nomogram for the computation of storm runoff from precipitation, consider the season and the duration of the storm, is presented, as well as a nomogram showing flood routing procedure for the Ohio River. Most of the discussion is devoted to artificia induced precipitation. The physical basis of the precipitation process is explained, working hypothesis of the "rain increasers" outlined, and a sound scientific approach to problem requested. *Subject Headings:* **1. Hydrometeorology 2. Precipitation charts 3. R off forecasting 4. Cloud seeding evaluation 5. United States.**—*A.A.*

5.9–258 551.

Turc, Lucien, **Nouvelle formule pour le calcul du bilan de l'eau en fonction des vale moyennes annuelles des précipitations et de la température.** [New formula for calcula water balance as a function of mean annual values of precipitation and temperature.] *démie des Sciences, Paris, Comptes Rendus*, 233(11):633–635, **1951.** 4 eqs. 4 refs. **DL** The actual annual evapotranspiration (E) can be computed with good results (errors in 5 of 231 catchment areas, distributed all over the world, are less than 10%) by the form $E=P\,[0.9+(P/L)^2]^{-1/2}$; P—annual precipitation; $L=300+25t+0.05t^3$ is the annual poten evapotranspiration (t—average annual temperature in °C.) *Subject Headings:* **1. Hydrol cycle 2. Evapotranspiration.**—*A.A.*

5.9–259 551.579.1:628.1 551.582

Burdon, David J., **Some aspects of the development of the water resources of Alg** *Water and Water Engineering*, 57(692/693):406–416, 467–471, Oct./Nov. **1953.** 11 4 tables, map, 9 refs. **DGS**—Pt. I deals with geology, topography and climate (very b from coast to Sahara, organization of the "Service de la Colonisation et de l'Hydrauli and works for irrigation, flood control and damage, water supply and hydro-electric dev ment. Ten typical development areas are surveyed. In Pt. II the development of u ground water is surveyed for the oases of the northern Sahara and the closed basins of Za and Chott Ech Chergui. *Subject Headings:* **1. Water supply 2. Algeria.**—*C.E.P.B.*

CLIMATOLOGY AND BIOCLIMATOLOGY

CLIMATOLOGY

See also: **Meteorology** (Raĭnov), 5.9–14; **Climatological problems, engineering design** (Jacobs, Spreen), 5.9–23.

5.9–260 551.5

Brooks, Charles F., **Completion of the Koeppen-Geiger Handbuch der Klimato** *Professional Geographer*, Hamilton, N. Y., 5(2):21–22, March **1953. DLC**—Work o sections on the western and eastern parts of Africa will have to be redone because pre work was lost or destroyed. Some work has been done on the volume on Asia. Conside new material is available on South America, Arctic and sub-Arctic. Data in the 1941 decennial volume of World Weather Records may serve in work on the Handbuch. Su a plan for completing the Handbuch and revising the older part. *Subject Headings:* **1. Kö Geiger Handbuch der Klimatologie 2. Climatological handbooks.**—*M.L.R.*

5.9–261

Castillo, Paulo S., Jr., **Need for a new Philippine climatology.** *Philippines. W Bureau, The Elements*, 3(10):5–6, Oct. **1952. DWB**—Shortcomings of purely stat climatology as opposed to descriptive (meaning analytical and interpretive) climatol pointed out. The foundations of a descriptive climatology of the Philippines (based analysis of air masses and weather types associated with them) were laid in the stu DEPPERMANN and ESTOQUE. *Subject Heading:* **1. Descriptive climatology.**—*G.T.*

5.9–262 551.58:551.311.

†Loewe, Fritz, **Beiträge zur Kenntnis der Antarktis.** [Contributions to the kno of the Antarctic.] *Erdkunde*, 8(1):1–15, Feb. **1954.** tables, 79 refs. English summar

LC—This memorial to W. MEINARDUS deals first with problems of climate in the light of ent material including upper air data. Among problems discussed are the low summer nperatures (attributed on the mainland to the high albedo of snow and ice and in the sub-ctic to the cloudiness and icy seas) and the "glacial anticyclone." The outflowing winds are tabatic with very small component due to pressure gradient. Pt. II deals with the mass nomy of the inland ice, Pt. III with the thickness, nourishment and movement of the ice lf. *Subject Headings:* **1. Climatology 2. Glaciology 3. Antarctica.**—*C.E.P.B.*

5.9–263 551.58 551.509.33:551.58

Thom, Herbert (*U. S. W. B.*), **The analytical foundations of climatology.** U. S. Weather reau, Jan. 20, **1954.** 25 p. 4 figs., 8 refs. "Presented at the 50th anniversary meeting, sociation of American Geographers, Philadelphia, April 13, 1954." **DWB**—The science climatology is a branch of meteorology which arose through the recognition of stability in ather fluctuations which are not completely predictable by physical analysis alone. Ob-ved climatological data series can be shown to be closely represented by ideal series of ndom numbers and hence the climatological variable is a random variable. This makes plication of the calculus of the random variable valid and leads to stochastic models for matological analysis which are in acceptable agreement with observation. This analysis nishes the basis for climatological prediction which is shown to be a special case of synoptic ediction or weather forecasting. The stochastic processes of climatology are shown to have physical basis. This is expressed by giving physical significance to the parameters of the bability function on the random variable and is the fundamental principle of dynamic matology. *Subject Headings:* **1. Climatology 2. Climatological prediction 3. Analytical matology.**—*Author's abstract.*

CLIMATIC ZONES

See also: **Effect of climate and atmos. pollution on corrosion** (Hudson, Stanners), 5.9–96; **The isanomaly chart of annual range of temp.** (Lautensach), 5.9–165.

5.9–264 551.581

Alisov, B. P., **Problema shirotnoĭ klimaticheskoĭ zonal'nosti.** [The problem of latitudinal matic belt.] *Moscow. Universitet, Vestnik,* 8(5):27–34, **1953.** fig., 6 refs. **DLC**—A rld map shows the main climatic belts, omitting the mountain climates. The classification climatic zones is not based on objective criteria, like KÖPPEN's work, but on a descriptive count of prevailing air masses, their temperature and humidity, mean location of fronts, tribution of permafrost, etc. *Subject Headings:* **1. Climatic classifications 2. Climatic nes.**—*A.A.*

5.9–265 551.581:69

Atkinson, G. Anthony, **An introduction to tropical building design.** *Architectural Design,* ndon, 23(10):268–271, **1953.** 7 figs., table. **DLC**—Brief survey of different types of pical climate and the building methods, especially color, shading and ventilation, to give eatest comfort. It is illustrated by photographs of typical buildings and a detailed climatic ble. *Subject Headings:* **1. Building construction 2. Tropical climates.**—*C.E.P.B.*

CLIMATE OF PARTICULAR PLACES

See also: **Application of climatological data to house design** (Olgyay, others), 5.9–9; **Development of water resources of Algeria** (Burdon), 5.9–259.

5.9–266 551.582:631.4:581.9(883)

Bakker, J. P., **Über den Einfluss von Klima, jüngerer Sedimentation und Bodenpro-entwicklung auf die Savannen North-Surinams (Mittelguyana).** [On the influence of imate, recent sedimentation and soil profile development on the savannas of north Surinam Dutch Guiana).] *Erdkunde,* 8(2):89–112, April **1954.** 14 figs., 22 refs. English summary 89. **DLC**—Except in a narrow coastal belt, savanna is found with a rainfall of 1952 mm the west to 2430 mm in the east. Since many of the savanna areas fall in the tropical rain

forest zone they must be due partly to non-climatic causes. There are: impermeable clay s hard pan, removal of soil, leaching and possibly human action. The climate of Surina discussed from the point of view of the index of aridity and KÖPPEN's classification. *Su Headings:* **1. Climate of Dutch Guiana 2. Savanna 3. Dutch Guiana.**—*C.E.P.B.*

5.9–267 551.582(67

Capuz, R., **Calendario meteorológico de los territorios españoles del Golfo de Gui** [Meteorological calendar of Spanish Guinea.] *Urania*, Madrid, 38(233):36–51, Jan./M **1953.** figs. **DWB**—The climate of Spanish Guinea is described in connection with ge features of four climatic zones: the desert, harmattan, rain and monsoon zones. In addi to these general climatic characteristics the author deals with special phenomena like tro cyclones, sand and dust storms, daily evolution of cloudiness over land and sea, land an breezes, etc. Average values of the principal meteorological elements are also indic Several phenomena are referred to with terms used by natives of the region. *Subject Head* **1. Climate of Spanish Guinea 2. Climatic zones 3. Harmattan 4. Spanish Guinea.**—

5.9–268 551.582(282.26):6

Goldie, Helen, **A new reservoir.** *Weather*, 9(4):99–104, April **1954.** 2 photos. Edit p. 98. **MH-BH**—The geography, climate and vegetation of Lake Victoria (Nyanza) the lake plateau are described, with an account of the discovery of the African Great L and the headwaters of the Nile. The plans for the erection of a dam at the Owens of the Victoria Nile, and the formation of a great reservoir in Lake Victoria with a sm one in Lake Albert, and hydroelectric plants, are summarized. The material is com from "The Nile," by H. E. HURST (London, 1952). The Editorial also discusses the pr *Subject Headings:* **1. Climate of East Africa 2. Irrigation 3. Nile Valley. I. Hurst, H.** *C.E.P.B.*

5.9–269 551.582(47) 551.589.

*Nebol'sin, S. I., **Klimaticheskiĭ ocherk Podmoskov'ia.** [Climatic outline of M Region.] *Leningrad. Tsentral'nyĭ Institut Prognozov, Trudy*, 10(37), **1949.** 111 p. 25 69 tables, 29 refs., append. p. 96–111. **DLC**—Data and a comprehensive discussion of cl for the agrometeorological station Sobakino (55°36′N, 37°12′E, $H=182$ m). Averag each month (1920–41) are given for sunshine duration, total radiation and soil tempera The period 1915–41 is covered for air temperature (daily minimum also for 5 cm and sur absolute and relative humidity, days with dry winds, evaporation, days with precipit and snow cover. Other tables give the frequency of air masses, temperature frequencie moisture, phenological data for 1934 species and their dependence on meteorological condi climatological data for different air masses, etc. *Subject Headings:* **1. Climatic data mass characteristics 3. Sobakino, U.S.S.R. 4. Moscow Region, U.S.S.R.**—*A.A.*

5.9–270 551.582

§*Serra, Adalberto B., **Meteorologia do Nordeste Brasileiro. Tese preparada para Assembléia Geral do Instituto Pan-Americano de Georgafia e Historia.** [Meteorolo Northeast Brazil.] Rio de Janeiro, Instituto Brasileiro de Geografia e Estatistica, Co Nacional de Geografia, **1945.** 120 p. tables, diagrs., charts. In Portuguese; co English translation p. 89–120, by Laura Friburgo. **DWB**—A long and detailed discus air masses, fronts, cyclones, waves, anticyclones, trade inversions, tropopause waves, diff between polar and tropical tropopause, etc. for Eastern Brazil and the North Atlantic tailed synoptic situations are analyzed and illustrated for the wet year of 1933 and wet year 1932. The centers of action, fronts, thickness of air masses and resulting w are described day by day and month by month. The normal upper air circulation a masses are also described by seasons. Frontal movements, high level pressures and ai winds and day to day pressure and temperature changes are presented in numerous and graphs. *Subject Headings:* **1. Tropical meteorology 2. Synoptic climatology 3. T tropopause 4. Climate of Brazil 5. Northeast Brazil. I. Friburgo, Laura** (*trans.*).—*N*

5.9–271 551.582.1(81)

Serra, Adalberto B., **Monografía sobre el mecanismo del "Tempo" en el Brasil.** [Monograph on the mechanism of weather in Brazil.] *Revista Meteorológica*, 8(31, 32):357–381; 1–35, Oct. **1949**; Jan. **1950**; 9(33, 34):71–84; 87–106, April; July **1950**. charts. **MH-BH**—An extensive discussion of the processes of weather formation during the four seasons of the year in Brazil and in the individual provinces. The air masses and fronts are discussed and their position and passage are illustrated on maps. *Subject Headings:* **1. Climate of Brazil 2. Air masses 3. Brazil.**—*I.L.D.*

5.9–272 551.582.2(54)

*Banerji, Sudhansu Kumar, **The climate of India.** *Bombay Natural History Society, Journal*, 50(4):718–733, Aug. **1952.** 3 tables, 5 plates, graph. Abstracted from reprint. **LC**—A detailed qualitative description of India containing a discussion of the northwest and southwest monsoon and west monsoon periods, variations in seasonal and spatial distribution of rainfall, cyclonic storms and depressions (eastern and western depression), character of the southwest monsoon rainfall and heavy rainfall. The author also considers the topographic factors such as land forms, vegetation, etc. involved in the formation of microclimates, periodic climatic variations and climatic trends, some unusual expressions for aridity, etc. The article contains charts showing mean pressure and prevailing winds for Jan. and July, daily rainfall distribution, normal dates of southwest monsoon and normal dates of its withdrawal and distribution of frequency of heavy rainfall; tables giving mean monthly maximum and minimum temperatures for various stations, and the incidence of floods and droughts from 1875–1949, and a graph showing various types of microclimates. *Subject Headings:* **Climatic data 2. Monsoon climates 3. Climate of India 4. India.**—*I.L.D.*

5.9–273 551.582.2:551.585.53(544)

*Banerji, Sudhansu Kumar, **Weather factors in the creation and maintenance of the Rajputana Desert.** *National Institute of Sciences of India, Bulletin*, No. 1:153–166, **1952.** figs., 3 tables. Abstracted from reprint. **DWB**—By means of an analysis of the temperature and precipitation data for the Rajputana and neighboring areas the author concludes that the low extension is caused by a slow rise in temperature and decline in rainfall. The rainfall trend and the spatial distribution of annual rainfall are analyzed; the aridity factor, precipitation ratio and the energy of incoming radiation over the Rajputana Desert are calculated and the possible effect of blowing dust in extending the desert is considered. Tables giving data on rainfall trend and rainfall normals and departures for various stations in Rajputana and vicinity, a map showing isohyets of mean annual rainfall and diagram showing relative amounts of dust in air for Jodhpur are included. *Subject Headings:* **1. Climate of the Rajputana Desert 2. Climatic data 3. Arid zones 4. Dust content of air 5. Rajputana Desert, India.**—*I.L.D.*

5.9–274 551.582.2(713)

*Chapman, L. J. (*Ontario Research Foundation, Toronto*), **The climate of Northern Ontario.** *Canadian Journal of Agricultural Science*, Ottawa, 33:41–73, Jan./Feb. **1953.** 5 tables, 32 figs., 10 refs. Abstracted from reprint. **DWB**—Northern Ontario, lying between the upper Great Lakes and Hudson Bay, has a modified continental climate. Since the longest weather records in the province show only a small rise in average temperature during the last century the present normals may be expected to approximate the climate of the future. In summer (July) the settled sections have temperatures of 61° to 67°F. In January the isotherm of 0°F runs through the northern clay belts. In the spring the curve of average temperatures reaches 32°F about April 24 in the warmest sections and May 5 in the Cochrane-Kapuskasing district, but the average date of the last killing frost is a month or more later. In the fall, the northern settlements cannot expect frost-free weather after the first week in September while a comparable date at North Bay, Sudbury, and Fort Frances is September 20. The average precipitation varies from 20.5 to 42.6 in. and fortunately it is heavier in summer than in winter. Serious deficiencies of soil moisture are not frequent. The surplus water is about 6 in. less in the Manitoba than on the Quebec boundary. The area is divided into 8 climatic regions, the characteristics of which are listed in a table. *Subject Headings:* **1. Climate of Northern Ontario 2. Climatic data 3. Climatic classifications 4. Ontario.**—*Author's abstract.*

CLIMATIC CHANGES

5.9–275 551.583.14:551.311

*Finsterwalder, R., **Die zahlenmässige Erfassung des Gletscherrückgangs an Os pengletschern.** [Quantitative estimation of glacial retreat in East Alpine glaciers.] *Z schrift für Gletscherkunde und Glazialgeologie*, 2(2):189–239, **1953.** 8 figs., 6 maps, 6 pho 15 tables, 38 refs. German and English summaries p. 234–235. **MH-BH**—Detailed stu of 8 glaciers in the Eastern Alps 1920–1950 show a total loss of area of 17%. Decrease depth of glaciers averaged 61 cm a year, about one quarter of total precipitation of 2–2½ Glacier retreat since 1950 falls into 3 stages, 1850–1890 (0.6 m/year), 1890–1920 (0.3 m) 1920–1950 (0.6 m). Snow line on two glaciers rose from about 2703 m in 1920 to 2795 m 1950; this is regarded as the true rise but another method gives mean for 8 glaciers as 63. varying on individual glaciers from 19–94 m. *Subject Headings:* **1. Climatic trends 2. Glac 3. Alps.**—*C.E.P.B.*

5.9–276 551.583.15:551.31

Leidlmair, Adolf, **Die jüngsten Gletscherschwankungen in ihrer Abhängigkeit Niederschlag, Temperatur und Strahlung.** [The latest glacier fluctuations and their pendence on precipitation, temperature and radiation.] *Petermanns Geographische Mitteil gen*, 97(3):179–181, **1953.** 5 figs., 7 refs. **DWB**—A study of retreat of East Alpine glac in 1945–1951. Closest relations are with cloudiness, rainfall and temperature of sum the very snowy winter 1950/51 only slowed up retreat slightly. Owing to the destruc of firn field a stronger impulse is necessary to initiate a glacier advance now than 30 years *Subject Headings:* **1. Glaciers 2. Alps.**—*C.E.P.B.*

5.9–277 551.583.2:551.31

Emiliani C. and Epstein, S. (*Inst. for Nuclear Studies, Chicago Univ.*), **Tempera variations in the lower Pleistocene of Southern California.** *Journal of Geology*, Chic 61(2):171–181, March **1953.** 6 figs., 4 tables, 11 refs. **DWB**—The thermal variations in Lower Pleistocene Lomita Marl of Southern California has been studied by means of ana of the O^{18}/O^{16} ratio of the $CaCO_3$ of fossil foraminifera. The theory was tested against sam from the Gulf of Mexico at depths where the temperatures are constant the year around. factor of depth and longitude can be eliminated by using only littoral material, so latitude time are the only variables. The resultant temperature variations (shown graphically) ma due to several factors of which climate is only one, and the climatic changes may be compl masked by the changes in marine currents and local tectonics, according to the author. *Su Headings:* **1. Pleistocene temperatures 2. Sea temperatures 3. Climatic cha 4. Southern California.**—*M.R.*

5.9–278 551.583.2

Frey, David G., **Regional aspects of the late-glacial and post-glacial pollen succe of southeastern North Carolina.** *Ecological Monographs*, Durham, N. C., 23(3):289 July **1953.** 11 figs., 3 tables, bibliog. p. 312–313. **DWB**—Pollen analysis of eight cases similar regions in the southeastern portion of the North Carolina coastal plain shows that early Wisconsin time the region has experienced a number of major shifts in vegetation "w partly on the basis of radio-carbon dates, appear to be correlated with the several glacia interglacial subages of Wisconsin time." The article includes a description of the conte the individual cores, an analysis of the size frequencies of *Isoetes* microspores and of the ratios and the generalized pollen diagram. The succession of characteristic vegetation discussed. *Subject Headings:* **1. Postglacial climates 2. Pollen analysis 3. North Car** —*I.L.D.*

5.9–279 551.583.3

†Gams, H., **Fortschritte der Spätglazialforschung. Sammelreferat.** [Advances o Glacial investigation. General review.] *Zeitschrift für Gletscherkunde und Glazialge* 2(2):369–374, **1953.** fig., 63 refs. **MH-BH**—Summary of a number of important since 1938. Radiocarbon dating places the Allerod oscillation in 10th millennium B. was widespread in Europe and North America. Tree line rose by 300–500 m and th

nded again by 260–300 m in Alps and S. Germany. Late glacial dating and correlation shown great advances. *Subject Heading:* **1. Quaternary climates.**—*C.E.P.B.*

5.9–280 551.583.3:552.53

Gripp, Karl, **Inlandeis und Salzaufstieg.** [Inland ice and salt crusts.] *Geologische ndschau*, Stuttgart, 40(1):74–81, **1952.** 2 figs., refs. **DLC**—The relation of salt crusts nland ice in Holstein is discussed. The view put forward is that the salt was originally oduced by earth movements, but was pressed out by the ice load and formed into crusts lack of ground water in the periglacial region. There have been structural changes in the tglacial. *Subject Headings:* **1. Quaternary climates 2. Salt deposits.**—*C.E.P.B.*

5.9–281 551.583.3:551.24

†Machatschek, Fritz, **Diluviale Hebung und eiszeitliche Schneegrenzendepression.** uaternary elevation and glacial snowline depression.] *Geologische Rundschau*, Stuttgart, 7/8):327–341, Sept. 10, **1944.** 39 refs. **DLC**—Glacial changes over the world are sumrized. Pleistocene crustal movements affected the extent of glaciation almost everywhere providing the necessary height, but meteorological factors were also necessary to give the thm of the Ice Age, which relief alone cannot explain. The crustal movements occurred several stages, greatest in Mindel-Riss interglacial, after which they weakened. Other tors were eustatic changes of sea level (about 100 m), decreased warming by ocean currents, decrease of snowfall over ice-sheets by anticyclone development. Climatic difference ween maximum and Wurm glaciation was greater than would be inferred from difference now lines, as shown e.g. by climatic changes in China. *Subject Heading:* **1. Glacial periods.** *C.E.P.B.*

5.9–282 551.583.7:576.1

Rensch, Bernhard, **Klima und Artbildung.** [Climate and the development of species.] *logische Rundschau*, Stuttgart, 40(1):137–152, **1952.** refs. **DLC**—Evolution is more id in warm than in cool zones, because the generations follow more quickly and mutants, ng less limited by climate, are more readily established. Since the earlier geological periods, ecially Trias-early-Tertiary, were mostly much warmer than present, evolution was more id. This was the period of giant reptiles; warm-blooded mammals had little advantage l progressed slowly. Only in the cold Quaternary did large mammals have an advantage. *bject Headings:* **1. Paleoclimates 2. Evolution.**—*C.E.P.B.*

5.9–283 551.583.7:551 2

Schwarzbach, Martin, **Orogenesen und Eiszeiten. Zur Ursache des Klimawechsels der Erdgeschichte.** [Orogenesis and ice ages. On the cause of the climatic change in th history.] *Naturwissenschaften*, 40(17):452–455, Sept. **1953.** 2 figs., 2 tables. **DWB**—nge of mean annual temperature in Germany is from 0°C in Quaternary glaciation to -30° at times in Mesozoic and Paleozoic. Present zonal temperatures in N and S hemiseres show that influence of land and sea distribution on mean temperatures of the earth is all. Glaciation is associated with mountain building, but not closely either in space or ie. It follows that while orogenesis provides the necessary environment, it cannot account the sudden *onset* of ice ages, which must be due to other causes, especially changes of solar liation. *Subject Headings:* **1. Geological climates 2. Orogeny.**—*C.E.P.B.*

MICROCLIMATOLOGY

See also: **Electrical hygrometer for microclimatic measurement** (Edney), 5.9–56.

5.9–284 551.584

†Thornthwaite, Charles W., **Topoclimatology. Prepared for presentation at the Toronto teorological Conference, Symposium on Microclimatology and Micrometeorology, Toronto, tario, Canada, Sept. 15, 1953.** Seabrook, New Jersey, Johns Hopkins Univ., Laboratory Climatology, Sept. **1953.** 13 p. refs: Mimeo. **DWB**—Climatology, like all disciplines, changing and must change. Phenology is coming back in importance. Thus emphasis

is now being placed on studying the climate of small areas or spaces which the author pre to call topoclimatology rather than microclimatology (the study of the layer of air near ground). Mapping of such factors as albedo, soil moisture or aerodynamic roughness necessary for better study of heat, moisture and momentum balance of small areas of earth. Skill in generalizing from a few observations to an area is needed. Climatic atl of the continents or world along these lines are needed. *Subject Headings:* **1. Topoclimato 2. Progress in climatology.**—*M.R.*

5.9–285 551.584.3:551.586

Schrödter, H., **Agrarmeteorologische Untersuchungen im Rahmen der Antibio Forschung in der Pflanzenpathologie (Vorläufige Mitteilung).** [Agro-meteorological vestigations in the province of antibiotics investigation in plant pathology (advance comm cation).] *Angewandte Meteorologie*, 2(1):23–26, Feb. **1954. MH-BH, DWB**—Investigat into natural occurrence of antibiotics such as *Streptomycin* in the soil showed that soil perature is important both for antibiotics and soil microflora. In combating plant dise by antibiotics temperature of upper soil layers is an especially important factor. *Su Headings:* **1. Microclimatology 2. Soil temperatures 3. Antibiotics.**—*C.E.P.B.*

5.9–286 551.584.4:631

Diem, M., **Das Mikroklima in einem künstlich beregneten Tabakbestand.** [The m climate in an artificially watered tobacco stand.] *Archiv für Meteorologie, Geophysik Bioklimatologie, Ser. B*, 5(2):215–233, **1954.** 16 figs., 4 tables, 16 refs. German, En and French summaries p. 215–216. **DLC**—A tobacco crop at Friedrichstal, Rhine va was given 8–10 mm water nightly, trebling gross receipts. Microclimate is compared neighboring unwatered potato field from surface to 128 cm above by numerous iso diagrams. Watering decreased diurnal variations of temperature and maintained humi above 45%, but air was rarely saturated so that leaves could transpire. Soil was kept m to a depth of 20 cm. *Subject Headings:* **1. Microclimatology 2. Watering of crops.**—*C.E.*

5.9–287 551.58

Kunii, K., **The tree temperature of Yoshino-Zakura (a kind of cherry blossom).** *Jo of Meteorological Research*, Tokyo, 4(12):1035–1038, March **1953.** 8 figs., 3 tables, 4 In Japanese; English summary p. 63. **MH-BH**—Author compares measurements of temperature made with a thermo-junction with air temperature and amount of insola on clear and cloudy days. On clear days tree temperature showed a range from 2– compared with 1–13°C in air. On cloudy days differences were much less. Results of monic analysis discussed. Tree temperature increases with increasing insolation, but gre rises are due also the advection of warm air. *Subject Headings:* **1. Tree temperatures 2. J** —*C.E.P.B.*

CLIMATIC CLASSIFICATION

See also: **Hydrologic problems of arid and semi-arid areas of U. S. and Canada** (Linsley), 5.9–255; **Weather factors in creation and maintenance . . .** (Banerji), 5.9–273.

5.9–288 55

Gentilli, Joseph, **Une critique de la méthode de Thornthwaite pour la classificatio climats.** [A criticism of Thronthwaite's climatic classification.] *Annales de Géogra* Paris, 62(331):180–185, May/June, **1953.** 4 refs. **DWB**—A severe criticism of TH THWAITE's approach to the computation of the moisture balance. The main objection that: 1) complicated empirical formulas derived with extreme accuracy from a few under irrigation cannot be generalized all over the world for all plant covers and 2) TH THWAITE's formula gives the same potential evapotranspiration, whether a region is h or dry. GENTILLI does not agree with the factor "thermal efficiency" and, finally, claims THORNTHWAITE's classification is not justified from the geographical and bioclimatol points of view. *Subject Headings:* **1. Thornthwaite's classification 2. Potential evapot piration 3. Climatic classifications.**—*A.A.*

5.9–289 551.585(64/5)

Kuhn, Werner, **Mittelmeer und Atlas—Kultur und Klimascheide.** [Mediterranean and tlas—cultural and climatic divides.] *Leben und Umwelt*, 10(7):145–152, April **1954.** 4 hotos. **DLC**—The mark of the Mediterranean climate is the irregular distribution of rainfall id the high evaporation, especially in N. Africa. The High Atlas has a European type of ountain climate, but the valleys on the southern slopes have a marginal desert climate. limate effects on vegetation, landscape and culture are described. *Subject Headings:* **1. Cli-atic regions 2. North Africa.**—*C.E.P.B.*

5.9–290 551.585.53:06

Fourth session of the Advisory Committee on Arid Zone Research. *International Union f Geodesy and Geophysics, Bulletin d'Information*, 2(2):354–355, April **1953. DWB**—Report i meeting Sept. 29–Oct. 1, 1952, at the Royal Society of London, with major activities, iembers and plans for 1953 and 1954. Problems which concern meteorologists are dew, se of wind power and solar energy, as well as hydroelectric power as affecting arid regions. *ubject Headings:* **1. Arid zone research 2. UNESCO. Advisory Committee on Arid Zone esearch.**—*M.R.*

5.9–291 551.585.55(54):631

Farmer, B. H., **Problems of land use in the dry zone of Ceylon.** *Geographical Journal*, 20(1):21–33, March **1954.** 8 figs., 8 photos, refs. Discussion p. 31–33. **DLC**—The Dry one is sufficiently uneven to complicate irrigation and cause risk of soil erosion. Though ot arid, drought is a problem as rainfall is fickle and often ineffective because of high evapora-on rate. Ground and surface water resources are poor. Indigenous land use is described ut population is expected to double in next 20 years and measures such as irrigation to extend ltivation areas are discussed. *Subject Headings:* **1. Arid climates 2. Agronomy 3. Ceylon.** *-C.E.P.B.*

BIOCLIMATOLOGY

See also: **Climate and architecture** (Aronin), 5.9–1; **Weather—crop relationships . . .** (Frisby), 5.9–84; **Exchange of air: rooms—outer air** (Georgii), 5.9–94; **Agro-met. investigation in province of antibiotics** (Schrödter), 5.9–285.

5.9–292 551.586:612

Lee, Douglas H. K. (*Johns Hopkins Univ.*), **Physiological climatology as a field of study.** *ssociation of American Geographers, Annals*, 43(2):127–137, June **1953.** refs. **DWB**—A ethodological discussion of the field of physiological climatology, which is defined commonly s the study of the relationships between the climatic elements and patterns and the physio-gical processes of man and of other warm blooded animals. A brief outline is given of the ction of the individual climatic elements and of their combined action upon physiological rocesses, of the specific physiological responses to climatic stimuli, of the application of the rinciples of physiological climatology to human welfare, to animal husbandry and to social roblems, and of training in this discipline. *Subject Heading:* **1. Physiological climatology.**—*.L.D.*

5.9–293 551.586:612.2

Köhler, Udo and Schmidt, Joachim, **Ergänzende Beobachtungen zum Problem der Vetterfühligkeit und -vorfühligkeit.** [Supplementary observations on the problem of eather sensitivity and presensitivity.] *Naturwissenschaften*, 40(23):612, Dec. 1, **1953. WB, DLC**—Remarks that solar changes affecting health are not necessarily followed by eather changes, in which case there is no "weather sensitivity." The medical aspect is ientioned. *Subject Heading:* **1. Weather sensitivity.**—*C.E.P.B.*

5.9–294 551.586:615.8:551.526.6(261.2)

Goedecke, Erich, **Zur "klimatischen" Verlängerungen der Badesaison an der deutschen ordseeküste.** [On the "climatic" prolongation of the bathing season on the German North ea coast.] *Annalen der Meteorologie, Medizin-meteorologische Hefte*, No. 9:1–6, **1954.** 5 figs.,

5 tables, 5 refs. **MH-BH**—Mean monthly water temperatures at lightships between 7° and 8°37′E, May–Oct. 1901–30 and 1931–50 are compared. June–Oct. all show an increa greatest in the east, reaching 1 to 1.3°C in Sept. Winter months show little change. Bath season (water temperature 15°C) began 6–15 days earlier and ended 9–14 days later in secc than in first period. Aug.–Sept. are the best months for curative sea bathing. *Sub Headings:* **1. Seaside resorts 2. Sea temperatures 3. Germany 4. North Sea.**—*C.E.P.E*

5.9–295 551.586:61

†Jungmann, Horst (*Hamburg Met. Amt für Nordwestdeutschland*), **Individuelle Klir therapie Kreislaufanalysen bei Erfolgen und Misserfolgen einer Kurbehandlung.** [dividual climatic therapy; analysis of the circulatory system in successes and failures follow health resort treatment.] *Deutsche Medizinische Wochenschrift*, Stuttgart, 78(3, 4):98–1 134–136, Jan. 16; Jan. 23, **1953.** 4 figs., bibliog. **DWB**—The author examined the beha of the circulatory system (as indicated by pulse frequency, elastic resistance of the arter stroke volume, minute volume, peripheral resistance, arterial blood pressure and car rate) in 50 successful and 47 unsuccessful cases of cures on the North Sea and 66 succes and 31 unsuccessful cures in the mountains. The characteristics of the circulation of succes cures were different in the North Sea and in the mountain cures and these differences v even present in patients who were taking cures because of general nervous exhaustion without organic disease as well as in tubercular patients. It is concluded that the succes failure of a cure depends primarily upon the patient's "vegetative structure" which is m fested by examination of the circulatory system. *Subject Heading:* **1. Climatotherap** *I.L.D.*

5.9–296 551.586:6

Lauscher, F. and Roller, M., **Eine vereinfachte Methode zur klimatologischen E teilung der Arbeitsbedingungen im Freien, angewandt auf das Gebiet von Wien.** [A plified method for the climatological evaluation of outdoor working conditions applicable t Vienna Region.] *Wetter und Leben*, 4(11/12):193–196, Dec. **1952.** fig., 4 tables. **MH-B** A previous scheme for evaluating the suitability of outdoor climates for working condi divided days into four classes: 1) unhindered (O); slight hindrance (A); hindered (B); sca possible (C). The method proposed for determining the number of C-days in different re and elevations of Austria in average and extreme years consists of establishing an emp relationship of the probability of C-days to monthly mean temperature in °C and mo precipitation in centimeters. Data are given on the mean number of C-days per mon different elevations in lower Austria, the annual number of C-days in Vienna for indiv years between 1901 and 1950 and ten year means and maximum mean and minimum nu of C-days in individual months and per year in Vienna during the period 1901–1950. *S Headings:* **1. Comfort climate 2. Vienna Region, Austria.**—*I.L.D.*

5.9–297 551.58

Clausse, R. and Grisolett, H., **La recherche en météoropathologie.** [Research in me pathology.] *La Météorologie*, Paris, 4th Ser., No. 29:38–42, Jan./March **1953.** F English and Spanish summaries p. 38. **MH-BH**—General remarks on the observa aspects of meteorology and of medical practice and especially of the statistical relatio between the two, and the limitations due to the heterogeneity of the observational ma It is suggested that if 1000 medical practitioners would record daily the types of ope performed and the outcome, these data could be easily correlated with the weather and v hypotheses tested scientifically leading to possible improvement in operative proc *Subject Headings:* **1. Meteoropathology 2. Medical meteorology.**—*M.R.*

ENVIRONMENTAL INFLUENCES

See: **Exchange of air: rooms—outer air** (Georgii), 5.9–94; **The isanomaly chart of the annual range of temp. . . .** (Lautensach), 5.9–165.

DYNAMIC AND SYNOPTIC CLIMATOLOGY

See also: **Weather and climate, Central Europe** (Flohn), 5.9–3; **Remarks on paper by J. R. Borchet on atmos. circulation** (Blumenstock), 5.9–126; **Classification of soundings by their structure** (Pone), 5.9–146; **Climatic outline of Moscow Region** (Nebol'sin), 5.9–269.

5.9–298 551.589.1:551.577.36

Kukota, K., **A study of dynamic climatology.** *Journal of Meteorological Research*, Tokyo, 2):999–1002, March **1953.** fig., 4 tables. In Japanese; English summary p. 61. **MH-BH** Author studies frequency distributions of monthly rainfall amounts at Kagoshima, Choshi d other places, coefficients of variation, 5% confidence limits and relations between different tions. *Subject Headings:* **1. Precipitation frequencies 2. Japan.**—*C.E.P.B.*

5.9–299 551.589.5:517.512.2

Fukuda, K., **On the periodicity of frequency of air masses (I).** *Journal of Meteorological search*, Tokyo, 4(7):363–366, Oct. **1952.** 4 figs., table. In Japanese; English summary (24). **MH-BH**—Harmonic analysis is a useful method for long-range forecasting, but it s to be kept in mind that predominant periods differ from one season to another. In this per periodicities of such predominant periods are investigated (Japan, 1926–1951) on the sis of a classification of pressure distribution in connection with air masses. *Subject Head-gs:* **1. Air mass statistics 2. Harmonic analysis 3. Long range forecasting 4. Japan.**—*uthor's abstract.*

MISCELLANEOUS APPLICATIONS

COSMIC INFLUENCES

See also: **Rainfall of Libya and solar activity** (Godoli), 5.9–232.

5.9–300 551.590.25

Manning, L. A., Villard, O. G., Jr. and Peterson, A. M. (*Dept. of Electrical Engr., Stanford niv., Calif.*), **The length of ionized meteor trails.** *American Geophysical Union, Transactions*, (1):16–21, Feb. **1953.** 4 figs., 7 refs., 3 eqs. **MH-BH**—Employing a statistical method simultaneous measurements of sixth magnitude meteors made at two meteor detection tions 100 km apart, a mean trail length of 25–30 km was obtained. Velocity of individual teors used in the test was not known. *Subject Heading:* **1. Meteor trails.**—*A.A.*

5.9–301 551.590.25

Volmer, Pierre, **Vérification à l'aide d'un radar de l'altitude de disparition des traînées ïtéoriques dont le radiant est connu.** [Radar observation of the height of extinction of teor trails having a known radiant.] *Académie des Sciences, Paris, Comptes Rendus*, 7(18):1065–1067, Nov. 2, **1953.** 2 figs., 4 refs. **DWB**—Explaining the geometry of de-mining the theoretical distance of the nearest radar echoes from meteor trails, which can be served with various radiants and heights of extinction, and comparing the results with tances of meteor trails actually observed (Aug. 11–13, 1952) the author places the average ght of meteor trail extinction in the neighborhood of 85 km. *Subject Headings:* **1. Meteor ils 2. Radar observation of meteors.**—*G.T.*

VISIBILITY

See also: **Cloud ceiling and visibility at the Porto Pedras Rubras Airport** (Portugal, Met. Service), 5.9–227.

5.9–302 551.591:551.509.5

*Browne, M. L., **Situations associated with below-minimum terminal conditions at Nelson. w Zealand.** *Meteorological Service, Technical Note*, No. 101, Aug. 24, **1953.** 5 p. 4 tables, **DWB**—Hourly daytime observations over four years were used in order to determine

occasions with visibility and ceiling conditions below the operational minimum; 73 these cases occurred in four main types of synoptic situations, which are described in detail, giving also forecasting rules. *Subject Headings:* **1. Visibility forecasting 2. C and visibility data 3. Nelson Airport, New Zealand.**—*A.A.*

OPTICAL PHENOMENA

5.9–303 55

Hynek, J. A. (*Ohio State Univ.*), **Unusual aerial phenomena.** *Optical Society of Am Journal*, 43(4):311–314, April **1953.** **DWB**—Over a period of years, diverse aerial sigh of an unusual character have been reported. On the assumption that the majority of reports, often made in concert, come from reputable persons, and in the absence of any uni hypotheses for the phenomena which stimulated these reports, it becomes a matter of fa character. Accordingly, several hundred serious reports of "unidentified aerial ob have been studied in detail in an attempt to get a pattern classification. It appears that reported phenomena which do not admit of a ready and obvious explanation exhibit well-defined patterns and that these are worthy of further study. One pattern in part that of a hovering nocturnal light, does not appear to be readily explainable on an astron basis or by mirages, balloons, or by conventional aircraft. *Subject Headings:* **1. O phenomena 2. Flying saucers.**—*Author's abstract.*

5.9–304

Liddel, Urner (*Bendix Aviation Corp., Detroit, Mich.*), **Phantasmagoria or unusual ob tions in the atmosphere.** *Optical Society of America, Journal*, 43(4):314–317, April **DWB**—For many eras in man's history, the sky has been occupied by various gods, stellations, or birds, mythical or real. A new concept has arisen in the last few years, a product of aviation and balloonry, and civil air defense spotters. In general the repor more psychological than physical significance. However, certain optical phenomena a gaining far wider interest than among research men in optics. Some "authentic repo "reliable, competent observers" are recounted and considered. While complete interpr of all "reports" is impossible, due to lack of sufficient experimental data, no evidenc for any phenomenon not explicable by standard physical concepts. *Subject Headings* **tical phenomena 2. Flying saucers.**—*Author's abstract.*

5.9–305 551.59

Hilder, Brett, **Refraction at sea.** *Institute of Navigation, London Journal*, 6(3):3 July **1953.** 4 refs. **DWB**—Account of observations of sunrise and sunset and of gre for determination of longitude. Effect of humidity and temperature gradient on low- refraction at sea is discussed with reference to work by A. FLETCHER and to observa the Pacific. Pt. 3 discusses irradiation in marine sextant sights. Comments by F are added. *Subject Headings:* **1. Atmospheric refraction. I. Fletcher, A.**—*C.E.P.B.*

5.9–306 551.593.5:551 521.

Sekera, Zdenek, **Legendre series of the scattering functions for spherical particles** fornia. Univ. at L. A. Dept. of Meteorology, Contract AF 19(122)-239, Investig Polarization of Sky Light, Scientific Report, No. 5, Nov. **1952.** 25 p. tables, 39 eqs. **DWB**—In order to simplify some problems of radiation transfer in the atmosphere, visable to express the intensity and the polarization parameters of the scattered rad series of Legendre polynomials with the scattering angle as their argument. In the text this is done for the case of scattering on dielectric spherical particles according *Debye* theory. The analytical form of coefficients in the series of Legendre polyno four scattering functions, appearing in the expressions for the intensity and the pol parameters of the scattering radiation, is derived, the method of their computation and illustrated by an example. Attached—in Appendix 2—are also tables of a few co which appear and are needed in the computation. *Subject Headings:* **1. Scattering c 2. Polarization. I. California. Univ. at L. A. Dept. of Meteorology II. Con 19(122)-239.**—*Author's abstract.*

5.9–307 551.593.5

*Sekera, Zdenek (*Univ. of Calif. at Los Angeles*) and Ashburn, Edward V. (*Research Dept. S. N.O.T.S., Inyokern*), **Tables relating to Rayleigh scattering of light in the atmosphere. merical solution of Chandrasekhar's equations.** *U. S. Naval Ordnance Test Station, yokern, NOTS 757; NAVORD Report,* 2061, Oct. 2, **1953.** 117 p. mostly tables, 4 refs., eqs. **MH-BH**—The theory of molecular scattering of light in a plane-parallel atmosphere, esented in the simplest form by LORD RAYLEIGH, was recently extended in an ingenious way CHANDRASEKHAR to cover the process of multiple scattering and the effect of the reflection m the ground. The computation of the intensity and polarization of the sky radiation by s theory requires the solution of four pairs of non-linear integral equations, obtained in the neral case by successive interation. For small values of the optical thickness $\tau(\tau = <0.10)$, e second approximation is an adequate approximation. The accompanying tables present e result of computation based on the second approximation only. They contain the in-nsities in the direction perpendicular and parallel to the vertical plane through the zenith d the sun (sun's vertical) for different zenith distances along this plane and for different nith distances of the sun. *Subject Headings:* **1. Scattering of light 2. Sky radiation Chandrasekhar, S.**—*Authors' abstract.*

ELECTRICAL PHENOMENA

5.9–308 551.594:629.13

Cornell Aeronautical Laboratory, Inc. Buffalo, N. Y., **Investigation of means to maintain ro electrical charge on aircraft.** Contract AF 19(122) 475, Interim Report, No. RA-766-5, May 1–Aug. 1, **1952.** 14 p. graphs, 2 refs. **DWB**—A preliminary report on tests of uipment that will reduce and maintain at zero the electrostatic charge that under certain eather conditions (icing clouds, dust and sandstorms, etc.) accumulates and results in corona scharges from the body of the aircraft. The effect of this corona, at times may block off dio communication and hinder atmospheric conductivity measurements by aircraft. *Subject eadings:* **1. Corona discharges 2. Electrical charges on aircraft 3. Radio communication. Hendrick, R. W. II. Contract AF 19(122) 475.**—*W.N.*

5.9–309 551.594:6

Mühleisen, R. (*Max Planck-Institut für Physik der Stratosphäre*), **Die luftelektrischen ements im Grosstadtbereich.** [Atmospheric electricity in large cities.] *Zeitschrift für ophysik, Sonderband,* Brunswick, p. 142–160, **1953.** 16 figs., 5 tables, 14 refs., eqs. **DWB**—e potential gradient, number of small ions, space charge and vertical current were measured der various local city conditions and near industrial enterprises by means of a newly de-loped equipment. The existence of space charges, drifting with the wind with a life time several hours is shown. These charges are usually positive while negative charges are metimes originated by chemical processes. The diurnal variation of the potential gradient Sundays is much smaller than on weekdays. *Subject Headings:* **1. Atmospheric electricity Urban influences 3. Industrial meteorology.**—*A.A.*

5.9–310 551.594:551.586

†Sundermann, Hans, **Über die Möglichkeit eines Biotropismus luftelektrischer Erscheinun-n.** [On the possibility of biotropic atmospheric electrical phenomena.] *Archiv für Me-rologie, Geophysik und Bioklimatologie, Ser. B,* 5(2):258–282, **1954.** 6 figs., 84 refs. German, nglish and French summaries p. 258–259. **DLC**—In theory a biological effect of long-wave $(0^5$-10^8 m) electromagnetic radiation (of atmospheric origin) is conceivable only as a secondary fect through the vegetative nervous system, and no effect of static atmospheric electricity to be expected. The effect of artificial static and alternating fields was investigated (electro-rdiogram, blood pressure, pulse, blood coagulation, growth rate, gaseous metabolism) t no definite result was obtained. A great deal of literature is discussed. *Subject Headings:* **Weather sensitivity 2. Atmospheric electricity effects.**—*C.E.P.B.*

5.9–311 551.594.12:551.510.535

Inn, Edward C. Y. (*Air Force Cambridge Res. Center*), **Photoionization of molecules.** *. S. Air Research and Development Command, First Annual Science Symposium, Eglin Air rce Base, Florida, May 18–20, 1953,* p. 12–15, **[1953.]** 3 figs., 16 refs. **DWB**—A review

of progress made at the Air Force Cambridge Research Center in studying the role of pho ionization in the structure and composition of the upper atmosphere. The two methods current use to measure ionization potentials of molecules (such as O_2 NO, NH_3, SO_2, C_2 CH_3I, CH_3OH and C_2H_5Br) are: 1) electron impact and 2) Rydberg series measureme The latter is difficult. A third, the method used by AFCRC, involves measuring the thresh for photoionization, as this enables measurement of ionization cross sections. Results tained by the author and those obtained by others are compared in tabular form for the ab mentioned gases. Further detailed studies support theory of origin of D layer. *Sub Headings:* **1. Photoionization of molecules 2. Ionospheric composition 3. D layer origin** *M.R.*

5.9–312 551.594.14:551.57

*Damon, Paul E. and Kuroda, P. K. (*Dept. of Physics, Univ. of Arkansas, Fayettevi* **On the natural radioactivity of rainfall.** *American Geophysical Union, Transactions,* 35 208–216, April **1954.** 4 figs., 4 tables, refs. **MH-BH**—Measurements by the authors of natural radioactivity of rain water are reported. The radioactivity varied from one to millimicrocuries per liter of rain water and was due primarily to RaB+C. The activ due to ThB were less than 10^{-10} and 10^{-11} curie per liter each, respectively. RaA is presen rain water at the time it reaches the earth's surface. The mechanism for the accumulatio decay products in rain water is discussed. The total activity (per unit area and time) incre toward the limiting value determined by the supply of RaA from Rn. An average atmosph Rn concentration within the cloud system of approximately 0.2×10^{-13} curie per liter is suffic to supply the rain water with the observed radioactivity. The natural radioactivity of atmosphere can be used as a tracer to study meteorological phenomena. *Subject Head* **1. Radioactivity of rainwater 2. Rainwater analysis.**—*Authors' abstract.*

5.9–313 551.59

Moraschinelli, E. (*Pavia Univ.*), **Autoradiografia dell'aerosol atmosferico.** [A radiography of atmospheric aerosols.] *Il Nuovo Cimento,* Bologna, 10(9):1341–1342, Sep **1953.** refs. **DLC**—Radioactive matter, produced by disintegration of radium and tho emanation, can become "anchored" to aerosols. In this paper an apparatus for determi radioactive transitions in a film of deposited atmospheric solid particles is described. principal problem investigated with the apparatus was whether successive elements of the series of radium-uranium and thorium are fully present on the aerosols. After discussing radioactive transitions identified, the author concludes that there is no radioactive equilib on the aerosols. The process of "anchorage" necessitates a certain time; short-lived elem are, therefore, liable to undergo a transformation before being anchored to an aerosol. *Su Heading:* **1. Radioactive aerosols.**—*G.T.*

5.9–314 551.594.2:5

König, Heinz, **Messungen zur Abschirmung atmosphärischer Störungen durch metalli Hüllen.** [Measurements of screening from atmospheric disturbances by metal cov *Annalen der Meteorologie, Medizin-meteorologische Hefte,* No. 9:32–34, **1954.** fig., table, 7 **MH-BH**—An auto with 1 mm steel walls, and a room screened by wire mesh, reduced ele magnetic radiation of wave length 6–60 km to less than 5% of that in open. *Subject Hea* **1. Electromagnetic waves.**—*C.E.P.B.*

5.9–315 551.

Schumann, W. O. and König, H., **Über die Beobachtung von "atmospherics" bei ge sten Frequenzen.** [On the observation of sferics at the lowest frequencies.] *Naturw schaften,* 41(8):183–184, April **1954.** 4 figs. **DLC**—Observations at Munich on 1–2 showed 2 types of disturbance, one an almost pure sine wave train with a frequency of a 9 Hz, lasting generally 0.3 to 3 sec. This is more frequent with cloudless sky, 16–18 summer, 13–15 h in winter. It sometimes occurs as a uniform persistent (15–30 sec) and at sunrise as irregular trains in groups of decreasing amplitude. The second grou cludes long trains of irregular waves of 3–6 Hz, coming at any hour with low cloud. N type occurs after a warming (e.g. föhn), but the second type has a maximum 1–2 days a föhn situation (as do maxima of accidents and births). *Subject Heading:* **1. Sfer** *C.E.P.B.*

PART II. SELECTIVE ANNOTATED BIBLIOGRAPHY ON THE CLIMATE OF THE ARCTIC BASIN

By: *Mary L. Rice, Andrew Assur and Malcolm Rigby*

INTRODUCTORY NOTE

This is the first in a series of 5 selective bibliographies on the climatology and meteorology of the Arctic. The second will be on the *Synoptic Meteorology and Aerology* of this area. The remaining three will deal with the climate of the North American Arctic, the Russian Arctic, and Greenland, Iceland and Spitsbergen.

In this bibliography we have included those works dealing mainly with the Arctic Ocean, its marginal seas and bordering coastal areas. Climatological studies of the Arctic as a whole as well as studies dealing with specific elements are included.

The dagger (†) indicates a good bibliographic source. Material on other phases of Arctic science as well as on subjects directly related to meteorology are contained in the Arctic Bibliography (*see item* 5I–226) and SIPRE Bibliography (*see item* 5I–233) which practically constitute an exhaustive survey of their respective fields. Although the present bibliography and subsequent bibliographies on Arctic meteorology and climatology have been in preparation over a period of several years by various members of the staff of *Meteorological Abstracts*, considerable benefit has been gained by consulting the recent Arctic and SIPRE Bibliographies.

Sources of data, particularly the reports of expeditions to the Arctic, and studies of specific meteorological elements have been given preference over material of a purely descriptive nature. The asterisk (*) is used to denote a good source of data.

The *Outline of Contents* is a guide to the several subjects emphasized as well as to the geographic areas covered.

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BIBLIOGRAPHY ON THE CLIMATE OF THE ARCTIC BASIN

1820

5I–1 551.506.5

*Scoresby, William, Jr., **An account of the Arctic regions, with a history and description of northern whale-fishery.** Edinburgh and London, Archibald Constable and Co., **1820.** 2 v. ta 22 plates, refs. **DLC**—Ch. V (p. 323–445) of Vol. I is a discussion of "Observations of the Atı pherology of the Arctic regions; particularly relating to Spitsbergen and the adjacent Green Sea" including temperature, pressure, atmospheric electricity, reflection and refraction phenom winds and hydrometeors. Tabular data for April, May, June and July, 1807–1818 will be foun Append. I and Table A of Append. II of Vol. I. *Subject Headings:* **1. Observational data 2. A Regions 3. Spitsbergen 4. Greenland Sea.**—*M.L.R.*

1835

5I–2 551.506.5:91.04

Ross, Sir John, **Narrative of a second voyage in search of a north-west passage, and of a resid in the Arctic regions during the years 1829, 1830, 1831, 1832, 1833. Including the reports of James Clark Ross, and the discovery of the northern magnetic pole.** London, A. W. Webster, I 2 v. illus., fold charts, colored plates, etc. **DWB**—Vol. I contains a chronological summa previous expeditions in search of a Northwest Passage and a narrative of the events on shipb and on sledge trips during the Ross Expedition to Boothia Peninsula. References to meteorolo observations will be found throughout. A fold. map of Boothia Peninsula showing discoveries r from 1829–1833 is included. [Vol. II] the Appendix to the Narrative . . . contains on p. XLIII tables of hourly observation of wind direction and force, state of the weather and tempera

hrice-daily observations of pressure; and monthly and seasonal summaries. *Subject Headings:* . **Observational data 2. Arctic expeditions 3. Ross Second Voyage, 1829–1833 4. Boothia Peninsula. I. Ross, James Clark.**—*M.L.R.*

1839

5I–3 551.524.31/2(98)

*Richardson, Sir John, **Results of thermometrical observations made at Sir Edward Parry's everal wintering-places on his Arctic voyages, and at Fort Franklin.** *Royal Geographical Society, London, Journal*, 9:331–380, **1839.** 53 tables. **DLC.** Also: Nervander, J. J., **Berechnung von Beobachtungen des täglichen Ganges der Temperatur in einigen arktischen Gegenden.** [Calculation of observations of daily temperature variations in some Arctic regions.] *Finska Vetenskaps-Societeten, Helsinki, Acta*, 2(2):945–1008, **1847.** tables. **DLC**—Daily observations of temperature t Melville Island (lat. 74°47′N) for Sept. 1819–Aug. 1820, Port Bowen (lat. 73°14′N) for Sept. 824–Aug. 1925, Igloolik (lat. 69°21′N) for Aug. 1822–July 1823, Winter Island (lat. 66°11′N) for uly 1821–June 1822 and Fort Franklin (lat. 65°12′N) for Sept. 1825–Aug. 1826 (June lacking) with liscussion of form and character of annual and monthly daily curve, of the average daily range or each month and for the year, etc. NERVANDER's paper is partially based on the data used by RICHARDSON as well as on data from Novaya Zemlya (lat. 73°57′N) for Aug. 1828–July 1839. *Subject Headings:* **1. Diurnal temperature variations 2. Temperature data 3. Arctic Regions. I. Nervander, J. J.**—*M.L.R.*

1873

5I–4 551.588(98)

Wheildon, W. W., **The Arctic regions. Atmospheric theory of an ameliorated climate and an pen sea in the Arctic regions, in opposition to the Gulf Stream theory.** *American Association for the Advancement of Science, Proceedings*, 21:111–133, 1872; 22:118–140, **1873. DLC**—Criticizes the Gulf Stream theory and offers the atmospheric theory as an explanation of an ameliorated climate n the Arctic regions. Second part of paper describes the Arctic regions, particularly the climate and ncludes fog or ice-blink, rainfall and wind. *Subject Headings:* **1. Climatic amelioration 2. Climate f the Arctic 3. Arctic Regions.**—*M.L.R.*

5I–5 551.506.5(984)

*Wijkander, August, **Observations météorologiques de l'expedition arctique suédoise 1872–1873.** (Meteorological observations of the Swedish Arctic Expedition, 1872–1873.) *K. Svenska Vetenskapsakademien, Handlingar, New Series*, 12(7), **1873.** 120 p. numerous tables, fold. plate (fig., diagrs.). **DLC**—Tables present hourly observations of usual meteorological elements at Mossel Bay, West Spitsbergen for the period Sept. 12, 1872–June 30, 1873 and a meteorological log notes occurrence of fog, aurora and optical phenomena. Also included are meteorological observations made on a trip over West Spitsbergen (May 20–June 22, 1873), daily wind and temperature observations at Grey-Hook (1872–1873) and 5-times daily observations of temperature and wind direction at Cape Thordsen (1872–1873). *Subject Headings:* **1. Observational data 2. Swedish Arctic Expedition, 1872–1873 3. West Spitsbergen.**—*M.L.R.*

1878

5I–6. 551.5(211):016

†Chavanne, Josef, **Die Literatur über die Polarregionen der Erde.** [Literature on the Polar egions of the Earth.] Pub. by the K. K. Geographische Gesellschaft in Vienna. Vienna, E. Hölzel, **878.** 335 p. Other authors: A. Karpf and Franz le Monnier. **DLC**—Basic reference work, the irst comprehensive bibliography of works on the polar regions. Contains preface (in German and English) and 6617 items published since the 16th century on the Arctic, subarctic and Antarctic; rranged in thirty-three regional sections by subjects, with chronological listing of books, papers in ournals, etc., and maps; author index. *Subject Headings:* **1. Arctic bibliographies. I. Karpf, A. I. le Monnier, Franz.**—*Arctic Bibliography, No. 3023.*

1886

5I–7 551.5:91.04(985)

Snellen, Maurits, **De Nederlandsche pool-expeditie, 1882–83.** [The Netherlands Polar Expedition, 1882–83.] Edited by B. J. G. Volck. Utrecht, L. E. Bosch and Son, **1886.** 164 p. ports., photos. **DWB**—Account, by the leader, of the Netherlands Expedition to Port Dickson, at the mouth of the Yenisei River. Chapters are devoted to CARL WEYPRECHT's plan for the first Polar Year (1882–1883) investigations, preparations for the Netherlands Expedition, the journey to Port Dickson, the Arctic day and night and the return trip. Of interest are the photographs of the station taken at different seasons, showing instrument exposure in relation to changing surroundings.

Subject Headings: **1. Arctic expeditions 2. Arctic instrumental exposure 3. International Pola Year, 1882–1883 4. Netherlands Polar Expedition, 1882–1883 5. Port Dickson. I. Volck, B. J. C** (*ed.*).—*M.L.R.*

1883

5I–8 551.506.5(268

*Mohn, Henrik, **Meteorologi.** [Meteorology.] (In: **Den Norske Nordhavsexpedition, 1876–7** V. 2, No. 1. Christiania, Grøndahl & Son, **1883.** 150+p. 13 figs., tables, 3 plates (diagrs. charts, eqs. Text in Norwegian and English. **DLC**—Describes instruments and methods observation. Tables contain meteorological observations taken on the Expedition in the Greenlan Sea, June 15–Aug. 11, 1877 and in Barents and Greenland seas and Spitsbergen waters June 27 Aug. 25, 1878 and in certain harbors. Hour, lat. and long. of each observation are given. Detaile discussion of the observations is included. The chart shows the route of the "Vøringen." *Subje Headings:* **1. "Vøringen" Expedition, 1876–1878 2. Observational data 3. Arctic Ocean.**—*M.L.*

1888

5I–9 551.506.5(98

†*Greely, Adolphus W., **Report on proceedings of the United States Expedition to Lady Frankli Bay, Grinnell Land.** Wash., D. C., Govt. Printing Office, **1888.** 2 v. Numerous photos, table diagrams, maps (some fold.). At head of title: International Polar Expedition. **DWB**—Vol. I is descriptive account, with a log, of the United States participation in the First International Pol Year. Vol. II (p. 91–400) contains extensive tabulation of daily observations of atmospheric pre sure; air temperature; vapor pressure and relative humidity; wind; clouds, precipitation and evapor tion; solar and terrestrial radiation; earth temperature; sea temperature and ice measurements a auroras, Fort Conger (81°44′N, 54°45′E) for varying periods in 1881, 1882, 1883. Miscellaneo observations (p. 401–453) made on the outward voyage, and on the retreat boats from Fort Cong to Cape Sabine are also tabulated. Charts of pressure, temperature and wind for the Northern Hem sphere, including the Arctic, are found throughout. A bibliography entitled "Authorities on Arct meteorology" (p. 455–474) is included. The more than 400 references are arranged alphabetical by author under three sub-divisions—General Arctic, America, and Arctic Europe and Asia with appendix. *Subject Headings:* **1. Observational data 2. Arctic bibliographies 3. Internation Polar Year, 1882–1883 4. Greely Expedition, 1881–1884 5. Lady Franklin Bay, Ellesmere Isla 6. Canadian Arctic.**—*M.L.R.*

1891

5I–10 551.506.5(484.2) 551.5

*International Polar Year, 1st, 1882–1883. Svenska Expeditionen till Spetsbergen, **Observatio faites au Cap Thordsen, Spitsberg, par l'Expédition Suédoise.** [Observations made at Cape Tho sen, Spitsbergen, by the Swedish Expedition.] Stockholm, Académie Royale des Sciences Suède, **1887–1891.** 2 v. numerous figs., tables, plates, eqs. **DWB, DLC** (Q115.I6S8)—T results of the Swedish expedition to Cape Thordsen (78°20′N, 15°E) have been published in 8 repo as follows: In Vol. I, 1. Historical introduction, by N. G. Ekholm; 2. Astronomic, geodetic and til observations, by N. G. Ekholm; 3. Meteorological observations, by N. G. Ekholm and 4. Terrest magnetism, by E. O. Solander. In Vol. II, 1. Aurora borealis, by Carlheim-Gyllensköld (*see* 4J– Oct. 1953, *MAB*); 2. Atmospheric electricity, by S. A. Andrée; 3. Optical phenomena of the mosphere, by V. Carlheim-Gyllensköld and 4. Research on the supposed change of skin color a wintering in polar regions, by R. Gyllencreutz. The report on the meteorological observati includes instrumentation, methods of calibration, problems of air hygrometry at low temperatu and extensive tables (p. 97–278) for the period Aug. 15, 1882–Aug. 23, 1883 of hourly observati of meteorological elements, four-daily measurements of snow and soil temperatures, daily snow de and evaporation measurements, daily periods of brilliant sunshine. Diurnal and annual course various elements are presented in graphs. *Subject Headings:* **1. Observational data 2. Atmosph electricity 3. Auroras 4. Terrestrial magnetism 5. International Polar Year, 1st, 1882–1 6. Cape Thordsen, Spitsbergen. I. Ekholm, Nils Gustaf II. Solander, Emil Otto III. Carlhe Gyllensköld, Vilhelm IV. Andrée, Salomon August V. Gyllencreutz, Richard Henrik Al VI. Svenska Expeditionen till Spitsbergen, 1882–1883 VII. Svenska Vetenskaps-akademie** *M.L.R.*

1896

5I–11 551.578.7 551.515.4(98,

*Harries, Henry, **Arctic hail and thunderstorms.** *Royal Meteorological Society, Quarterly Jour* 22(100):251–267, Oct. **1896.** chart, 4 tables. **DLC**—Attempts to disprove former statements hail and thunderstorms occur seldom or rarely in the Arctic. The log books of 92 ships which v above the 60th parallel were examined for data. Some of the volumes went back to 1818 but

majority covered the 40 years before 1895. From this source is secured data for tables showing monthly and annual observations of hail and thunderstorms from 60° northwards. An examination of published works dealing with Arctic expeditions gives further evidence of the occurrence of hail and thunderstorms in the area under discussion. Other tables show the number of days with hail and thunderstorms at 9 stations in Iceland from 1880–1891 (thrice-daily observations) and thunderstorm data (number of storms, duration, intensity, etc.) for five years (1884–1888) for northern Russia. *Subject Headings:* **1. Hail in Arctic 2. Thunderstorms in Arctic 3. Arctic Regions.**—*M.L.R.*

1899

5I–12 551.582.3

†Bartholomew, John George, **Atlas of meteorology; a series of over 400 maps . . .** ed. by Alexander Buchan. Westminster, Constable and Co., **1899.** 40 p., XIV p. front., 34 double maps, bibliog. p. V to VIII. Half-title: Physical atlas. Vol. III. **DA, DWB**—The most complete collection of climatic charts, showing the distribution of temperature, pressure, winds, clouds, sunshine and rainfall over the globe; also charts of storm tracks, storm frequency and weather types, anomalous situations, etc. Appended is list of meteorological services and their publications, chart showing worldwide distribution of meteorological stations, giving indication of penetration of stations into Arctic as of the turn of the century; glossary of terms, and tables of data. In addition to worldwide charts of the above elements on Mercator Projection showing conditions up to 82°N, there are a number of circumpolar charts showing isotherms in the North Polar Regions for Jan., March, May, July, Sept. and Nov. (Plate 4); and isobars and winds for the same regions and months (Plate 13), all based on the latest station and Polar Year expedition data. These charts show the eccentric nature of the pressure and temperature field in the Arctic Basin (cold pools in northeastern Siberia), over the solid ice region on the American side of the Pole, and the third in the Canadian Archipelago. The circulation schemes have been somewhat revised, on the basis of more recent data, especially from expeditions north of 83° which was the limit of observational data at the time of publication. Many of the charts are by BUCHAN. An extensive classified bibliography is included. *Subject Headings:* **1. Climatic atlases 2. Arctic climatology atlases. I. Buchan, Alexander** (*ed.*).—*M.R.*

1901

5I–13 551.506.5(268)

*Baldwin, Evelyn Briggs, **Meteorological observations of the Second Wellman Expedition.** Washington, Govt. Print. Off., **1901.** p. 349–436. tables. *U. S. Weather Bureau. Report of the chief.* 1899/1900, Pt. VII. **DWB**—Extensive tabular data and meteorological log for expedition to Franz Josef Land led by WALTER WELLMAN. Daily observations are divided into three series: 1) those made on shipboard from Norway to Franz Josef Land and on the return voyage; 2) those at head quarters, as at Harmsworth House and Fort McKinley and 3) those made on sledge journeys. Monthly resume of all observations, p. 404–407. *Subject Headings:* **1. Observational data 2. Meteorological logs 3. Wellman Expedition, 2nd, 1898–1899 4. Franz Josef Land 5. Arctic Basin.**—*M.L.R.*

1905

5I–14 551.506.5(268)

*Mohn, Henrik (*ed.*), **Meteorology.** (In: Nansen, Fridtjof (*ed.*), **The Norwegian North Polar Expedition 1893–1896. Scientific Results.** London, New York, [etc.] Longmans, Green and Co., [etc.] **1900–1906,** 6 v.) v. 6, No. 17, **1905.** 659 p. mostly tables, 20 plates. **DLC.** For a review in German see: Hann, Julius, **Meteorologie des Nordpolarbassins. Ergebnisse der Norwegischen Nordpolarexpedition unter Fridtjof Nansen.** *Meteorologische Zeitschrift,* 23(3):97–114, March **1906.** tables. **DWB**—Opens with a description of the instruments, procedures for taking observations and methods for the reduction of the observations. Next is a record of the daily observations made from July 21, 1893 to Aug. 17, 1896 of wind direction and velocity, pressure, temperature, vapor pressure, relative humidity, and amount, form and direction of clouds with the latitude and longitude of the "Fram" for each hour of observation from Vardö to the New Siberian Islands. This journal is followed by extensive tables showing monthly wind frequency, hourly and monthly pressure, temperature, vapor pressure, relative humidity and clouds, daily and monthly probability of precipitation and fog, daily and monthly temperature of polar ice. The tabular material is accompanied by explanatory text. The volume concludes with daily meteorological observations taken on a sledge journey from the "Fram" to the Winter Hut (81°13′N, 55°20′E) and from there to Franz Josef Land (Mar. 16, 1895–June 16, 1896) and a summary of the observations taken in West Spitsbergen (Sept. 1844–June 1895). The plates consist of graphic presentations of daily, monthly and seasonal wind, temperature, relative humidity, cloudiness and probability of precipitation as well as monthly isobaric and monthly and annual isothermal and isabnormal charts.

Subject Headings: **1. Observational data 2. Expeditionary climatic data 3. "Fram" Expedition, 1s 1893–1896 4. Arctic Basin. I. Nansen, Fridtjof** (*ed.*) **II. Hann, Julius.**—*M.L.R.*

1906

5I–15 551.506.5(98

*Canada. Dept. of Marine and Fisheries, **Report on the Dominion Government expeditio to Hudson Bay and the Arctic islands on board the D.G.S. Neptune, 1903–1904,** by A. P. Low . . Ottawa, Govt. Print. Bureau, **1906.** 355 p. illus., plates, fold. map (in pocket), tables, 6 append **DWB**—The report contains an account of the voyage, a brief survey of earlier explorations in th northeastern American Arctic (Chap. IV, p. 71–111) and chapters on the geography and inhabitan of the area, the whaling and sealing industries and navigation of Hudson Strait and Hudson Ba Appendix I (p. 300–313) is a table containing daily observations of the usual meteorological elemen and the place of observation for the period Aug. 26, 1903–Aug. 27, 1904. *Subject Headings:* **1. O servational data 2. "Neptune" cruise, 1903–1904 3. Hudson Bay 4. Canadian Arctic. I. Lo A. P.**—*M.L.R.*

1907

5I–16 551.524.37(9

*Dorscheid, Otto, **Die mittlere Dauer des Frostes auf der Erde.** [The mean duration of frost the earth.] *Meteorologische Zeitschrift,* 24(1, 2):11–24, 49–63, Jan., Feb. **1907.** fig., 14 tables, refs. **DWB**—A comprehensive study of frost conditions made on the basis of long period observ tions for the three continents and the North Polar region. The author presents an exhaustive tab of frost duration periods for numerous points of which about 50 were in the Arctic. (*Same item* 4C–38, March 1953, *MAB.*) *Subject Headings:* **1. Frost duration data 2. Europe 3. Asia 4. Nor America 5. Arctic Regions.**—*N.T.Z.*

5I–17 551.506.5(2

*Mohn, H., **Meteorology.** (In: Norkse Videnskaps Akademi i Oslo, **Expedition in the "Fram 1898–1902.** Oslo., Pub. by the Akademi, 1907–1930.) v. 1, No. 4, **1907.** 399 p. chiefly tabl **DLC**—Presents extensive bi-hourly observations of pressure, air temperature, relative humidit wind, clouds, precipitation, auroras and optical phenomena at the four winter stations, Rice Stra Havefjord and Gaasefjord I and II (geog. coordinates and length of stay given) as well as meteo logical observations taken when the ship was under way. (*Same item as* 5A–62, Jan. 1954, *MA Subject Headings:* **1. Expeditionary climatic data 2. "Fram" Expedition, 2nd, 1898–1902 3. Arc Basin.**—*M.L.R.*

1923

5I–18 551.588(268

Chamberlin, Thomas Chrowder, **Significant ameliorations of present Arctic climates.** *Jour of Geology,* Chicago, 31(5):83–94, 376–906, July/Aug. **1923.** 2 figs., refs. **DLC**—Discussion of causes of the climatic oasis at the head of Baffin Bay in the region of Etah, particularly the circulat of waters from the polar region and from the Atlantic Ocean. The layers of the polar sea and Atlan waters, and the intercontinental ridges which direct the flow of the middle and lower layers are fined, and the transfer of heat by the warm middle Atlantic layers into Baffin Bay is recogni as significant for the amelioration of climate under discussion. *Subject Headings:* **1. Climatic an lioration 2. Etah, Greenland.**—*Arctic Bibliography, No. 2958.*

1924

5I–19 551.524.3 551.582(98,

*†Pollog, Carl Hanns, **Untersuchungen von jährlichen Temperaturkurven zur Charakteri und Definition des Polarklimas.** [Analysis of annual temperature curves for the purpose of c acterizing and defining polar climate.] *Geographische Gesellschaft in München, Mitteilun* 17(2/3):165–253, **1924.** 5 figs., 68 tables, 158 refs. **DLC**—The bulk of this paper is a tab summary of monthly mean temperature data available for the polar regions. The data were ta from various reports of expeditions to different regions of the Arctic and Antarctic (1819–19 They are presented in 31 groups according to geographical location. Most of the stations repre the polar maritime climate. From the temperature data and from sporadic data on other elem (wind direction, upper air temperature, snowfall, etc.) the author deduces characteristics of p maritime and polar continental climate as determined by the radiative properties of snow an and their modification by sea water. A great deal of attention is paid to the temperature inve in the polar atmosphere. *Subject Headings:* **1. Temperature variations 2. Expeditionary clim data 3. Polar climates 4. Arctic Regions 5. Antarctica.**—*G.T.*

1925

5I–20 551.583(268):551.311.181

Brooks, C. E. P., **The problem of warm polar climates.** *Royal Meteorological Society, Quarterly Journal*, 51:83–94, **1925. DLC**—Sets out theory of natural instability of an ice-cap and argues that a comparatively small access of heat to the Arctic Ocean would suffice to clear away the ice and raise temperature by about 25°C. Only two types of oceanic polar climate are possible, glacial and mild, and these have alternated throughout glacial time. (*Same item as* G–30, July 1950, *MAB.*) *Subject Headings:* **1. Climatic changes 2. Glacial periods 3. Arctic.**—*C.E.P.B.*

5I–21 551.524:551.585(98)

Kerner, Fritz, **Über die "nicht reale" Poltemperatur im reinen Seeklima.** [The unreal polar temperature in a purely maritime climate.] *Meteorologische Zeitschrift*, 42(9):357–358, **1925.** The temperatures of the Polar regions do not agree with theoretical values calculated from HOPFNER's MEECH and WIENER's formulas. In summer it is too cold and in winter too warm for a pure marine climate at those latitudes on the basis of radiation calculations. HOPFNER allows for the retention of 1/7 (.132) of the incoming radiation, whereas MEECH and WIENER allow for 2/5 (.415) to be retained. The latter formula is more realistic than the former. Details of N and S polar conditions are cited by way of critical comparison of these formulas. *Subject Headings:* **1. Polar temperatures 2. Climatic classifications 3. Polar Regions.**—*M.R.*

1926

5I–22 551.515.4(98/99)

*Kallio, Niilo, **Die Erstreckung des Gewitters nach dem Nord- und Südpol.** [The extension of thunderstorms towards the north and south poles.] *Finska Vetenskaps-Societeten, Helsinki, Commentationes Physico-Mathematicae*, 2(10), **1923–1926.** 11 p. map, tables, refs. **DWB**—All available data for land areas around the Arctic are summarized. Chart shows the relationship of the northern limits of thunderstorms to the 4°C July isotherm. (*Same item as* H–22, Aug. 1950, *MAB.*) *Subject Headings:* **1. Thunderstorms in Arctic 2. Arctic Regions 3. Antarctica.**—*M.L.R.*

5I–23 551.582(98):551.311.181(98)

*Vize, V. IU., **K voprosu o genezise klimata v poliarnykh stranakh.** [Genesis of climate in polar regions.] *Meteorologicheskiĭ Vestnik*, Leningrad, No. 11:233–240, **1926.** refs. **DLC**—Although it is recognized that a sea or lake covered with solid ice and snow would act as a continental source for air masses, the amount of open water and the transfer of heat through the ice from the warm water beneath considerably modifies this "continentality" of areas as the Arctic or Lake Baikal, even in mid winter. The extent of this modification is shown quantitatively, and amounts to 8° to 10°C at some seasons. In winter, when the thermal gradient in the ice is greater (20° to 30°C per 3 m), the transfer of heat from water to surface of ice and hence to the air is greatest. The amount of heat transferred through surface layers of the soil to the air is shown to be far smaller in the Arctic than is the transfer through sea or lake ice. Hence the seas are not truly continental source regions. *Subject Headings:* **1. Climatic effects of Arctic ice 2. Arctic air masses 3. Heat transfer through ice 4. Air mass source regions.**—*M.R.*

1927

5I–24 551.311.181(268)

*Malmgren, Finn, **On the properties of sea ice.** (In: Maud Expedition 1918–1925, **The Norwegian North Polar Expedition with the "Maud," 1918–1925, Scientific results.** Bergen, John Grieg, 1927–1939. 5 v.) Vol. 1, No. 5, **1927.** 67 p. diagrs., tables. **DN-HO**—Based on the author's own investigations during the drift of the "Maud" (1922–1925) and on regular ice observations, and ice temperature records made by the expedition as a whole. Includes: salt in sea ice; specific gravity; specific heat, "heat of fusion" and heat expansion; temperature (with tables); thermal conductivity and conclusions regarding heat transport to the air from below. *Subject Headings:* **1. Sea ice properties 2. "Maud" Expedition, 1918–1925 3. Arctic Basin.**—*Arctic Bibliography, No. 10834.*

5I–25 551.574.42:551.571(268)

*Malmgren, Finn, **Studies of humidity and hoar frost over the Arctic Ocean.** *Geofysiske Publikasjoner*, Oslo, 4(6), **1927.** 20 p. 17 figs., tables, eqs. **DLC**—The author designed a rime and hoar frost gage on the principle of the registering balance, using a cylinder as a collector. He was able to obtain some data during the North Polar Expedition of the "Maud" and established certain relationships between the rate of deposition, wind velocity, relative humidity over ice and air temperature. He gives the following formula $M = C.V(E' - E'_i)rq$, where C is a constant, E'—actual vapor pressure, E'_i—saturation vapor pressure, r—time in seconds, q—effective area of collector.

(*Same item as* 3J–81, Oct. 1952, *MAB.*) *Subject Headings:* **1. Rime formation 2. Rime meas ment techniques 3. Rime intensity 4. Humidity effects 5. "Maud" Expedition, 1918–1 6. Arctic Ocean.**—*N.T.Z.*

5I–26 551.5:91.04(

Sverdrup, Harald Ulrik, **Die meteorologischen Untersuchungen und Ergebnisse der "Ma Expedition.** [Meteorological investigations and results of the "Maud" Expedition.] *Peterm Geographische Mitteilungen, Ergänzungsheft,* 191:63–68, **1927.** 4 figs. **DLC**—Meteorolo program and results of 6 years of carefully planned observational work over ice and adjacent a of Arctic Basin is summarized. Charts show route of the "Maud." Selected temperature and v soundings (individual and seasonal) up to 2000 m over ice are presented and discussed. *Su Headings:* **1. Arctic expeditions 2. Arctic meteorology 3. "Maud" Expedition, 1918–1925 4. A Basin.**—*M.R.*

1928

5I–27 551.556:551.311.181(

*Sverdrup, Harald Ulrik, **The wind-drift of the ice on the North-Siberian Shelf.** (In: M Expedition, 1918–1925, **The Norwegian North-Polar Expedition with the "Maud," 1918–1 Scientific Results,** Bergen, John Grieg, 1927–1939. 5 v.) v. 4, No. 1, **1928.** 46 p. tables, di 3 plates (2 fold.). **DSI-M**—Theoretical study of the ice-drift (a pure wind drift) on the N Siberian Shelf, discussing the non-existence of a permanent current, the direction of the wind- in relation to the wind and various forces which cause the wind-drift of the ice. *Subject Head* **1. Ice drift 2. Wind effects 3. North Siberian Shelf.**—*Arctic Bibliography, No. 17316.*

5I–28 551.311.181

†Transehe, N. A., **The ice cover of the Arctic Sea, with a genetic classification of sea ice.** *A can Geographical Society, Special Publication, No. 7. Problems of Polar Research,* p. 91–123, 17 figs., 35 refs. **DLC**—Opens with a discussion of the three types of ice: fast ice, pack ice an Arctic Pack with area covered by each, what each class consists of and the annual life cycle of Classifies sea ice as to: types resulting from natural growth (accretional types), types resu from motion (dynamic types) and hummocking. Subdivides pack ice according to age, stre surface and arrangement. All of the above then summarized in a list of sea ice definitions. cludes with a discussion of polynyas in their regional aspect. The bibliography, arranged by co of publication, is an excellent guide to ice literature. *Subject Headings:* **1. Sea ice cover 2. Se terminology 3. Terminology 4. Arctic.**—*M.L.R.*

1929

5I–29 551.50

*Baur, Franz, **Das Klima der bisher erforschten Teile der Arktis.** [Climate of the explored of the Arctic.] *Arktis,* Gotha, 2(3–4):77–89, 110–120, **1929.** 8 tables, 4 charts, 3 plates (**DLC**—A summary of all available data for the entire Arctic. Contains discussion and ta data (monthly averages) of meteorological elements, derived from periods of varying length. on observations of 44 weather stations above the 70°N lat. parallel, listed with geographic loca period of record and bibliographic sources. *Subject Headings:* **1. Climatological data so 2. Climate of the Arctic 3. Arctic Regions.**—*Arctic Bibliography, No. 1157.*

5I–30 551.46 551.311.184

*†Sverdrup, Harald Ulrik, **The waters on the North-Siberian shelf.** (In: Maud Exped 1918–1925, **The Norwegian North Polar Expedition with the "Maud," 1918–1925, Scientific Re** Bergen, John Grieg, 1927–1939. 5 v.) v. 4, No. 2, **1929.** 131 p. 47 figs., 4 fold. charts, 34 t bibliog. p. 130–131 (55 refs.), 5 eqs. Appendix, 75 p. all tables. **DLC**—Results of oceanog observations, and discussion of observations, made primarily from 1922–1924 when the "Mauc drifting with the ice on the North Siberian Shelf. Instruments and methods for the measur of temperature, density and salinities, currents, etc. are described. Topics covered: surfa servations and ice conditions, 1918–1920; bathymetric features of the shelf (fold. chart a vol.); currents, temperatures and salinities, oxygen and hydrogen ion concentrations in the Chu and East Siberian seas; wind currents in shallow water and eddy viscosity; appearance and g of the Arctic Pack and influence of formation of ice upon growth of the Arctic Pack and inf of formation of ice upon the composition of sea water. Tabular data for: 1) surface temper salinity, 2–3) vertical series showing time, depths, temperature, salinity, density, oxygen a drogen concentration, 4) direct current measurements, 5) current measurements when vess drifting, 6) direct measurements of ice drift and 7) mean hourly components between N of the relative current. *Subject Headings:* **1. Arctic oceanography 2. Ice drift 3. Wind cu 4. "Maud" Expedition, 1918–1925 5. North Siberian Shelf 6. Arctic Basin.**—*M.L.R.*

1930

5I–31 551.583

Berry, E. W., **The past climate of the North Polar region.** *Smithsonian Miscellaneous Collections*, Wash., D. C., 82, No. 6, **1930.** 29 p. **DLC**—Mesozoic flora surrounding North Pole point higher temperatures and less sharp zonation than at present but not to subtropical conditions d absence of zones. They prove conclusively that pole was in present position. (*Same item as* 83, July 1950, *MAB.*) *Subject Headings:* **1. Climatic changes 2. Paleoclimates 3. Arctic.**—*E.P.B.*

5I–32 551.582:016(268) 91.04

†Breitfuss, Leonid L'vovich, **Die Erforschung des Polargebietes Russisch-Eurasiens. See-und ndreisen während der Jahre 1912–1924.** [Exploration of the Polar area of Russian Eurasia. a and land expeditions during 1912–1924.] *Petermanns Geographische Mitteilungen, Ergänzungs-*, No. 188, **1925. DLC.** 113 p. 2 tables, 16 maps (fold.), refs., bibliog. (337 items) p. 90–105. so his: **Die Erschliessung des eurasiatischen hohen Nordens; 30 Jahre eigener Arbeit an der ssenschaftlichen und kulturellen Erschliessung des nördlichen Eismeeres, 1898–1928.** [The ening up of the Eurasian Arctic; 30 years of my own work in scientific and cultural investigation the Arctic Ocean, 1898–1928.] *Ibid.*, No. 207, **1930.** 57+p. 5 plates, fold. map, refs., bibliog. 50–55. **DLC**—The first work, a comprehensive survey of an enormous amount of literature from ssian, German and Scandinavian sources, is organized systematically according to major basins arents, White, Kara and East Siberian seas), under each of these basins according to the land as (such as Kola Peninsula, Novaya Zemlya, Svalbord, Franz Josef Land and other coastal ions), and under these subdivisions, the expeditions or settlements from which scientific data available. Some meteorological, climatic and oceanographic data have been extracted from the rature and are presented in tables. The work contains an excellent bibliography and author d subject indexes. The second work consists of 5 parts. Pt. 1 is a detailed description of the entific work of the Murman Expedition (1898–1908); Pt. 2 deals with the author's work from 09–1921 (publications of the reports of the Expedition and work with the Hydrographic Office) d activities in Berlin (after 1921); Pt. III lists 182 of the author's publications (1896–1929); IV is a subject index to those works and Pt. V provides additional symbols for the large fold. p which shows the field of activity of the author during this 30-year period. *Subject Headings:* **Climate of Soviet Arctic 2. Arctic bibliographies 3. Murman Expedition, 1898–1908 4. Arctic peditions 5. Arctic Seas 6. Soviet Arctic.**—*M.R., M.L.R.*

5I–33 551.582(798,987,98)

***†Handbuch der Klimatologie,** . . . ed. by W. Köppen and R. Geiger. Berlin, Gebruder rntraeger, **1930–.** 5 v. in 17 pts. numerous figs., charts, diagrs., tables and refs. **DWB, DLC**—is basic reference work on the climatology of the world was projected in 5 volumes, some parts which have not been completed (*see* 5.9–260, Sept. 1954, *MAB*). Bd. I deals with general climatology, Bd. II–V with regional climatology. Several regional studies deal with areas covered this bibliography. Bd. II, t.J (p. 304–326), WARD, ROBERT DEC., and BROOKS, CHARLES F., **aska.** Bd. II, t.K (p. 3–30), Sverdrup, H. U., **Übersicht über das Klima des Polarmeeres und des nadischen Archipels.** [Resume on the climate of the Polar Sea and the Canadian Archipelago.] . III, t.L (124 p.), BIRKELAND, B. J. and FÖYN, N. J., **Klima von Nordwesteuropa und den Inseln n Island bis Franz-Josef-Land.** [Climate of Northwest Europe and the islands from Iceland to anz Josef Land.] Bd. III, t.N, POLETIKA, W. P.v. and KÖPPEN, W., **Klimakunde von Russland Europa und Asien.** [Climatic knowledge of Russia in Europe and Asia.] The section on aska contains a discussion of the factors controlling Alaska's climate, regional climatic descriptions, matic areas according to Köppen's classification, extensive tabular data for temperature, precipitan, wind, cloudy days and days with precipitation, snow, thunderstorms, frost and ice, and an habetical list of stations. The second article contains standard climatic data for 9 stations in the nadia Arctic and 2 drifts of ships ("Fram" and "Maud"). Maps for the Arctic are presented for erage temperature distribution (6 months, isotherm difference 2°C) and for pressure (4 months, bar distance 2 torr [mm Hg]), showing also wind direction. Special tables give interdiurnal mperature variability, diurnal temperature amplitudes, frequency of calms, fog and mist and obability of precipitation. Description of climate is based mainly on SVERDRUP's 6 years of rsonal observation. The third article includes descriptions of the climate of Jan Mayen, Iceland eroe Islands, Franz Josef Land, Spitsbergen and Bering Island. Temperature and precipitation ta are presented for Jan Mayen, Iceland (9 stations), Faeroe Islands, Spitsbergen (2 stations) d Bering Island. Bibliographies are included for each geographic area. The climatic study of ssia is in 2 parts—the first, by POLETIKA (unchecked), is descriptive; the second, by KÖPPEN, ntains extensive tables of monthly temperature and precipitation (with period of record), yearly mmary of precipitation, monthly pressure (1881–1910), difference in pressure Jan.–July, wind ection (7. 13 and 21 h), thrice-daily relative humidity, cloudiness, clear and cloudy days, days

with rain, snow, thunder and hail, and temperature variation from normal. Approximately Arctic stations are represented. Sources from which the data were secured are listed. *Sub Headings:* **1. Climatic data 2. Climatic charts 3. Climate of the Arctic Basin 4. Alaska 5. Ca dian Arctic 6. Arctic Regions. I. Köppen, Wladimir P.** (*ed.*) **II. Geiger, Rudolph** (*ed.*).—*A. M.L.R.*

5I–34 551.521.16(

Meinardus, Wilhelm, **Zum jahreszeitlichen Gang der Beleuchtung in den Polargebieten.** [seasonal course of illumination in the polar regions.] *Arktis*, Gotha, (1/2):4–6, **1930.** fold. dia **DLC**—Explains a diagram, showing for each day of the year the illumination conditions from 5(to the pole (full day or night, civil and astronomic twilight). The diagram is constructed for level, similar aids can be prepared for higher altitudes. *Subject Headings:* **1. Illumination diagra 2. Twilight duration 3. Polar Regions.**—*A.A.*

5I–35 551.525.5(

†Satow, Gretl, **Das Bodeneis in der Arktis. Tatsachen und Hypothesen.** [Ground ice in Arctic. Facts and hypotheses.] *Aus dem Archiv der Deutschen Seewarte*, Hamburg, 49(5):7- **1930.** 3 diagrs. (fold.), bibliog. p. 40–43. **DLC**—A survey of the distribution of permafrost an the various theories of its formation. Bibliography contains 102 items. *Subject Headings:* **1. Per frost formation 2. Permafrost distribution 3. Arctic.**—*Arctic Bibliography, No. 15364.*

5I–36 551.5:06(98):62

Shaw, Sir William Napier, **Aeroarctic—systematic observations in the Arctic.** *Royal Met logical Society, Quarterly Journal*, 56(236):352–354, July **1930.** ref. **DLC**—Refers briefly to international association formed in Berlin in 1926, with NANSEN as president, for the purpos undertaking systematic investigation of the physiography of the Arctic. Notes that so far not had been accomplished, though the execution of the project would constitute a fitting memoria NANSEN. Comments on growing interest of Russian meteorologists in the Arctic as evidence establishment of new stations and MOLCHANOV's wireless station for transmitting automatica daily record of weather—a device which could be dropped on an ice floe. *Subject Headings:* **1. A research 2. Automatic weather stations 3. International Society for the Exploration of the A by Means of Aircraft 4. Arctic.**—*M.L.R.*

1931

5I–37 551.

Arktis; Vierteljahrsschrift der Internationalen Gesellschaft zur Erforschung der Arktis Luftfahrzeugen. v. 1–4, 1928–**1931.** Gotha, J. Perthes. 4 v. plates (part fold.), maps (part f diagrs. Ed. by Fridtjof Nansen, 1928–1929; by A. Berson, L. L. Breitfuss and W. Burns, 193 Quarterly. Ceased pub. **DLC, DWB**—Articles are by international figures in Arctic researcl wide range of subjects. Reports and news of the meetings and activities of the International So for the Exploration of the Arctic by Means of Aircraft are included. The bulk of the materia German, with occasional articles in French or English. *Subject Headings:* **1. Arctic rese 2. Periodicals. I. Nansen, Fridtjof** (*ed.*) **II. Berson, A.** (*ed.*) **III. Breitfuss, L. L.** (*ed.*) **IV. H W.** (*ed.*) **V. International Society for the Exploration of the Arctic by Means of Aircraft.**—*M*

5I–38 551.521.

*Kimball, Herbert H., **Solar radiation intensities in Arctic regions.** *Beiträge zur Geop* 32:100–105, **1931.** 3 tables. **DLC**—Summarizes solar radiation intensity measurements m the Arctic prior to 1929. Sources of data given for the 6 stations with their geographic coordi period of record and instrument used. One table summarizes the measurements of solar ra intensity at normal incidence and another summarizes the radiation measurements obtai Green Harbor, Spitsbergen. *Subject Headings:* **1. Solar radiation intensity 2. Green H Spitsbergen 3. Arctic Regions.**—*M.L.R.*

5I–39 551.58

*Koloskov, Pavel Ivanovich, **Nekotorye kharakternye cherty poliarnogo klimata.** characteristic features of polar climate.] *Vladivostok. Dal'nevostochnyĭ Geofizicheskiĭ I Izvestiia*, 1:1–[30], **1931.** graph, chart, 13 tables, 17 refs. English summary p. 27–29. D discussion of polar maritime climate based on the annual course of air temperature. A disting characteristic is a secondary winter maximum—explanation given. Monthly mean air temp for varying periods of record (7 to 27 years) for Spitsbergen, Dudinka, Markova on Anad South Orkneys. *Subject Headings:* **1. Polar maritime climates 2. Air temperature data 3 Regions.**—*M.L.R.*

5I–40 551.5:621.396

Krüger, K., **Die drahtlose Nachrichtenübermittlung in den Polargebieten.** [Radio communication in Polar regions.] *Arktis*, 4(3/4):52–64, **1931.** 4 figs., 10 refs., 13 eqs. **DLC**—Analysis of the influence of low temperature, snow and ice cover, low solsticial point (solar position) and proximity of the magnetic pole. *Subject Headings:* **1. Radio communication 2. Polar Regions.**—*Arctic Bibliography, No. 9358.*

5I–41 551.524.31(268)

*Sverdrup, Harald Ulrik, **Diurnal variations of temperature at polar stations in the spring.** *Beiträge zur Geophysik*, 32:1–14, **1931.** 2 figs., 4 tables, 4 refs. German summary p. 1. **DLC**—A study of relationships between diurnal air temperature, snow surface temperature, incoming radiation, wind velocity and cloudiness, using data from the "Maud," "Fram" and other expeditions. The "Fram" type of diurnal variation is characterized by a rapid increase in the amplitude after the return of the sun until a maximum in April, a decrease to a minimum in midsummer and a slight increase in the autumn. *Subject Headings:* **1. Diurnal temperature variations 2. Arctic Basin.**—*M.L.R.*

1932

5I–42 551.587(268)

Kerner, Fritz, **Der heutige Stand des Problems der milden Polarklimate der Vorzeit.** [The present state of the problem of mild polar climates of prehistoric time.] *Meteorologische Zeitschrift*, 49(5):186–191, May **1932.** **DWB**—Various theories of climatic change in the geological past are critically reviewed (e.g., WEGENER's) and the consequences of an ice-free Arctic Basin (in terms of temperature, storminess, precipitation, etc. and of vegetation in the surrounding land areas) elaborated on. Evidence of such conditions in the Arctic (e.g., Alaska) is cited. The author is of the opinion, supported by quantitative calculations, that the ice-free condition is the natural or real condition of the Arctic Basin, in view of radiation and ocean current temperature import. *Subject Headings:* **1. Arctic Basin temperature 2. Paleoclimates 3. Climatic change theories 4. Arctic.**—*M.R.*

5I–43 551.521.1(268)

*Mosby, Håkon, **Sunshine and radiation.** (In: Maud Expedition, 1918–1925, **The Norwegian North Polar Expedition with the "Maud," 1918–1925, Scientific Results.** Bergen, John Greig, 1927–1939. 5 v.) v. 1, No. 7. **1932.** 110 p. 31 figs., 31 tables (in text) +4 tables (of results), 21 refs., plate. **DSI-M.** Also: **Zur Strahlung in der Arktis.** [Radiation in the Arctic.] *Meteorologische Zeitschrift*, 50:146–147, **1933.** **DWB**—Papers based on mean hourly values of the total radiation income and sunshine duration for 1922–1925. Description of the instruments and methods used, and detailed discussion of each of these elements, accompanied by tables and graphs make up the bulk of the paper. Tables of results give: 1) duration of sunshine for each hour of the day, 2) results of measurement of normal radiation from the sun, 3) mean hourly values of the total radiation income on a horizontal surface in g. cal. $cm.^{-2}$ $min.^{-1}$ and 4) results of the observations of effective nocturnal radiation. The plate contains 6 photographs of instruments. A chart showing the route of the "Maud," indicates where observations were made. *Subjec tHeadings:* **1. Global radiation 2. "Maud" Expedition, 1918–1925 3. Arctic Basin.**—*M.L.R.*

5I–44 551.551(268) 551.511(268)

*Sverdrup, Harald Ulrik, **Wärmehaushalt und Austauschgrösse auf Grund der Beobachtungen der "Maud" Expedition.** [Heat economy and magnitude of exchange on the basis of the observations of the "Maud" Expedition.] *Beiträge zur Physik der freien Atmosphäre*, 19:276–290, **1932.** 5 figs., 5 tables, 12 refs., 10 eqs. **DLC**—The observations made on the "Maud" Expedition are considered ideal for determining the austausch coefficient under various conditions of stability, since detailed measurements were made of temperature under and in the first few meters above the ice or snow, and the wind, humidity, cloudiness and other conditions are known. Calculations are made, and shown in tables and graphs, of the austausch coefficient η for different cloud amounts and temperature gradient and as a function of wind speed. The values of η are greater for cloudy than for clear days and for high than for low wind speed. Individual soundings are analyzed and typed according to austausch degree and stability. (*Same item as* 4B–76, April 1953, *MAB.*) *Subject Headings:* **1. Turbulent exchange 2. Stability 3. "Maud" Expedition, 1918–1925 4. Arctic Basin.**—*M.R.*

1933

5I–45 551.521.1(984)

*Ångström, Anders, **On the total radiation from sun and sky at Sveanor.** *Geografiska Annaler*, Stockholm, 15(2/3):151–160, 1933. 3 tables, 16 refs. **DLC**—Table 1 gives hourly total radiation

from sun and sky at Sveanor (79°56′N, 18°18′E) for July 2–Aug. 10, 1931 observed during th Swedish-Norwegian Arctic Expedition, 1931 with a Robitzsch actinograph. (*Same item as* 5G–3 Aug. 1954, *MAB.*) *Subject Headings:* **1. Global radiation data 2. Swedish-Norwegian Arct Expedition, 1931 3. Sveanor, North-East Land.**—*M.L.R.*

5I–46 551.506.5:91.04(9

*Ellsworth, Lincoln and Smith, Edward H., **Report of the preliminary results of the aeroact expedition with "Graf Zeppelin" 1931.** *Geographical Review*, 22(1):61–82, Jan. **1932.** 17 figs refs. **DLC.** Also: Weickmann, Ludwig, **Die Meteorologischen Aufgaben bei der 1. Polarfah des "Graf Zeppelin" July 1931.** [The meteorological aims of the first polar flight of the "Gr Zeppelin," July 1931.] *Petermann's Geographische Mitteilungen, Ergänzungsheft*, No. 216:48–5 **1933.** 2 tables, 5 plates. **DLC**—The first article is a running account of the flight (course shown c chart) accompanied by photos. Results discussed are: 1) contributions to the map, 2) meteor logical data (p. 78–79), 3) observations of earth magnetism and 4) oceanography and ice observatio and navigation. No data. Weickmann reports on the organization, instrumental equipmen weather conditions and results of meteorological and aerological observations made during th flight. Route was from Berlin to Archangel across Barents Sea to Franz Josef Land, to Severnay Zemlya, Taimyr Peninsula and Novaya Zemlya. Temperature, humidity and pressure variatio were of particular interest and the vertical thermal structure of the atmosphere up to 1000 m w thoroughly investigated. Results are presented in tables. *Subject Headings:* **1. Observational da 2. "Graf Zeppelin" Expedition, 1913 3. Arctic Basin. I. Weickmann, Ludwig.**—*M.L.R. and A.M.*

5I–47 551.506.5(26

*Sverdrup, Harald Ulrik, **Meteorology, Part I, Discussion; . . . Part II, Tables.** (In: Mat Expedition, 1918–1925, **The Norwegian North Polar Expedition with the "Maud," 1918–192 Scientific Results.** Bergen, John Grieg, 1927–1939. 5 v.) v. 2, **1933.** 331 p. 110 figs., 1 tables, 6 plates, 64 refs.; v. 3, **1930.** 527 p. chiefly tables. **DSI-M.** See also descriptive accoun by the author in: *Monthly Weather Review*, 50:74–75, Feb. **1922**; *Scientific Monthly*, 22:400–4 May **1926**; *Smithsonian Institution, Annual Report*, **1926**, p. 219–233 and *Royal Meteorologi Society, Quarterly Journal*, 57:216–220, **1931.** For summary in Russian see Tikhomirov, E. **Nekotorye iz rezul'tatov ekspeditsii "Mod" (1918–1925 gg).** [Some results of the "Maud" Expe tion, 1918–1925.] *Meteorologicheskiĭ Vestnik*, 45:1–17, **1935. DLC**—Meteorological data discuss in Pt. I comprise ordinary meteorological observations as well as ascents with kites and captive a pilot balloons. Data for years 1922–1925 far more comprehensive than for earlier years of t voyage. Observations from the different years are not treated in chronological order, but the sin meteorological elements have been dealt with in the following order: upper air temperature and wi temperature, pressure, wind, humidity, precipitation, hoar frost (*see item* 3J–97, Oct. 1952, *MA* fog, clouds, and cloudiness and circulation of the air. The discussion is accompanied by tables summarized data and numerous graphs. The plates consist of 64 meteorograms which are explain in the text. Tables I–IV contain meteorological observations on the journeys from Vardö to Ca Cheliuskin in 1918, from Cape Cheliuskin to Ayon Island in 1919, from Ayon Island to Nome a return from Nome to Cape Serdze Kamen in 1920 and from Cape Serdze Kamen to Seattle in 19 Tables V to IX . . . on journeys away from the vessel in the years 1919–1921; Tables XII, X and XIV . . . at the three winter quarters at 8, 14 and 20 h; Tables XV and XVI . . . of journ in 1922 from Seattle to pack ice; Tables XVII, XVIII and XIX when drifting with the pack Sept. 1, 1922 to Aug. 8, 1924, etc.; Table XX . . . on the journey from Chetyrekhstolbov Isla to Seattle, July 13 to Oct. 5, 1925; Table XXI contains the results of ascents with captive ballo and kites; Table XXII . . . with pilot balloons; Table XXIII contains the geographic position noon each day during the drift, Sept. 1, 1922 to Oct. 8, 1924; Table XXIV contains hourly val of pressure; Table XXV . . . mean hourly values of wind direction and speed; Table XXVI . hourly values of temperature; Table XXVII . . . differences between temperature of snow surf and temperature of the air and Table XXVIII . . . hourly values of relative humidity. *Sub Headings:* **1. Observational data 2. Upper air data 3. "Maud" Expedition, 1918–1925 4. Arc Basin. I. Tikhomirov, E.**—*M.L.R.*

5I–48 551.46 551.506.5(268.3,26

*Vize, V.IU. (*ed.*), **Nauchnye rezul'taty arkticheskoĭ ekspeditsii na "Sedove" v 1930 g.** [Sci tific results of the Arctic expedition with the icebreaker "Sedov" in 1930.] *Leningrad. Arktiche Nauchno-issledovatel'skiĭ Institut, Trudy*, v. 1, **1933.** 173 p. figs., charts, extensive tables, r **DLC**—The volume comprises six separate reports on the results of the icebreaker "Sedov" Drift Expedition in the Barents and Kara seas in 1930. The following topics are covered: 1. Observati of surface water layers in the Barents and Kara seas, by Vize; 2. Deep water hydrological obser tions, by Vize and Laktionov; 3. State of ice in the Barents Sea and northern part of Kara Sea in summer 1930, by Vize; 4. Sea depths measured by the "Sedov" Expedition in the summer 19

y Vize; 5. Meteorological observations of usual elements (4 hr intervals) on the "Sedov" Expedition ily 16–Sept. 13, 1930, by Vize and 6. Meteorological and hydrologic observations made on the otor-ship "Belukha," Aug. 27–Oct. 27. *Subject Headings:* **1. Arctic oceanographic data 2. Obervational data 3. "Sedov" Drifting Expedition, 1937–1940 4. Arctic Basin. I. Laktionov, . F.**—*A.M.P.*

1934

5I–49 551.582(268) 551.311.173

*Lauscher, Friedrich, **Vom Klima der Packeiszone.** [Climate of the pack ice zone.] *Meorologische Zeitschrift*, 51(11):401–408, Nov. **1934.** 4 tables. **DLC**—During the Second International Polar Year there were no observations from the Central Arctic (Pack Ice) region. Only ne 4 years of observations from the "Fram" (1893–96) and the 7 from the "Maud" (1918–25) rnish any detailed knowledge of meteorological and ice conditions in that vast area. So the author as devoted considerable space to a review of the results published by H. U. SVERDRUP in the "Scienfic Results of the Norwegian North Polar Expedition of the "Maud" 1918–1925," (*see* 5I–47). ach of the 5 volumes of the report are described and then the following aspects considered anatically: 1) Aerological observations, 2) Temperature, 3) Humidity, 4) Precipitation, 5) Rime ice,) Fog and haze, 7) Clouds and 8) Atmospheric circulation. *Subject Headings:* **1. "Maud" Expedion, 1918–1925 2. Climate of Arctic pack ice 3. Arctic Basin.**—*M.R.*

1935

5I–50 551.583:597(268)

†*Berg, L. S., **Nedavnie klimaticheskie kolebaniia i ikh vliianie na migratsiiu ryb.** [Recent limatic fluctuations and their effect on fish migration.] *Problemy Fizicheskoĭ Geografii*, Moscow, :73–84, **1935.** tables, refs. **DLC**—Data and evidence presented to show the northward migration f various types of marine fauna (fish) from the last century to 1933, especially from 1920–1933. The evidence comes from all parts of the North Atlantic, Barents and Kara seas, etc. In addition o fish count, the mean temperature of the surface waters of the Barents Sea (1912–1930) according o VIZE, and from May and August (1900–1932) according to ZUBOV, is tabulated to show warming. Break up of ice in rivers and straits, phenological data, air temperature and other data for the past 00 years are also cited as evidence of fluctuations. All data are carefully annotated as to source. *Subject Headings:* **1. Warming of Arctic 2. Climatic variations 3. Fish migration 4. Arctic Basin.** *—M.R.*

5I–51 551.594.7(98)

Bonch-Bruevich, M. A., **Rol' elektromagnitnykh voln dlia izucheniia atmosfery.** [Significance f electromagnetic waves for the study of the atmosphere.] (In: Vsesoiuznaia Konferentsiia po zucheniiu stratosphery, Leningrad, 1934, **Trudy. 1935.** p. 269–282. 6 figs., 4 eqs.) **DLC**— general review of sferics, caused by tropospheric and stratospheric disturbances, radio location of yclones and fronts in the Arctic, basic theory of propagation, radio echoes, etc. Soviet studies in his field were made especially in the polar regions. *Subject Headings:* **1. Radio wave propagation . Sferics 3. Arctic.**—*A.A.*

5I–52 551.596.1(98)

*Freĭman, L. S., **Opyty po akusticheskomu zondirovaniiu stratosfery v Arktike v techenie II nezhdunarodnogo poliarnogo goda.** [Experiments on acoustical sounding in the Arctic during the econd International Polar Year.] (In: Vsesoiuznaia Konferentsiia po Izucheniiu Stratosfery, eningrad, 1934, **Trudy, 1935.** p. 139–144. table.) **DLC.** Also: Wölcken, K., **Schallunteruchungen im Polargebiet.** [Sound research in polar regions.] *Zeitschrift für Geophysik*, 10:224–34, **1934.** 9 figs., tables, refs. **DWB**—The first report is on 12 successful experimental explosions among a total of 28) for the determination of anomalous sound propagation. The experiments, ade during the International Polar Year (1932–33) on Novaya Zemlya, were the first of this kind the Soviet Union and the Arctic in general. The work was organized by the German scientist VÖLCKEN with the aid of the Soviet Government. The main tabulated results show the definite xistence of a temperature inversion also during the polar night. The second article is also based on bservations of abnormal sounds during the winter solstice at 76°N lat. during the International olar Year, 1932–1933. Observations tabulated and microbarograph registerings reproduced. Differences in summer and winter in directions, frequency and forms of sound waves noted. Recordng stations were located on Franz Josef Land and Novaya Zemlya. (*Same item as* J–62, Oct. 1950, *IAB.*) *Subject Headings:* **1. Anomalous sound propagation 2. Acoustical sounding 3. International Polar Year, 1932–33 4. Novaya Zemlya 5. Franz Josef Land. I. Wölcken, K.**—*A.A. nd M.R.*

5I–53 551.58:551.482:551.311(98)

Gorbatskiĭ, G. V., **K voprosu of erozionnoĭ deiatel'nosti poliarnykh rek.** [On the problem of the erosion activity of polar rivers.] *Zemlevedenie*, Moscow, 37(3):263–273, **1935.** refs. **DLC**—Climatic factors affecting river erosion in the Arctic are: 1) precipitation, 2) evaporation, 3) temperature of air as it affects opening and closing of rivers and depth of ice. Precipitation in Arctic varies from 100 to 200 mm a year from north to south and in the north mostly as snow or ice. Evaporation is negligible (not over 40–50 mm a year). In the extreme north the erosion season is short (2 months), in the south 4 months (mid May–mid Sept.). Permafrost also affects erosion. *Subject Headings:* **1. Climatic effects 2. River erosion 3. Arctic.**—*M.R.*

5I–54 551.506.5(268) 551.46

*Laktionov, A. F., **Nauchnye resul'taty arkticheskoĭ ekspeditsii na "Lomonosove" v 1931 godu.** [Scientific results of the Arctic expedition on the "Lomonosov" in 1931.] *Leningrad. Arkticheskiĭ Nauchno-Issledovatel'skiĭ Institut, Trudy*, v. 18, **1935.** 106 p. figs., numerous tables, refs. German summaries at end of each article. **DLC**—The book contains four separate reports on the results of the expedition. Report 1, dealing with deep water hydrological observations in the northern part of the Kara Sea, discusses questions of temperature and salinity, oxygen content, alkalinity, hydrogen ions and phosphate concentration at different sea depth. Report 2, on observations of Barents Sea surface water level, discusses the temperature, salinity and alkalinity of the water. Report 3 contains a table showing the results of meteorological observations carried out on the ice breaker in July–Sept. of atmospheric pressure, wind speed, temperature, humidity and cloudiness. Finally, Report 4, on navigating conditions in "Russkaia Gavan'," gives a description of the most convenient harbor on the northwest shore of "Novaya Zemlya." *Subject Headings:* **1. Observational data 2. Arctic oceanographic data 3. "Lomonosov" Expedition, 1931 4. Arctic Seas.** —*A.M.P.*

5I–55 551.311.18:001(084.4)

Maurstad, Alf, **Atlas of sea ice.** *Geofysiske Publikasjoner*, Oslo, 10(11), **1935.** 17 p. 10 plates (40 ice photos), 2 refs. **DLC**—Purpose of Atlas is to establish uniform terminology for use in making ice observations. The terms here defined supply complete information as to character and appearance, thickness and arrangement of ice. A brief account of the life cycle of sea ice is included. Photographs illustrate the various forms of ice. *Subject Headings:* **1. Sea ice 2. Ice terminology 3. Ice atlases.**—*M.L.R.*

5I–56 551.506:91.04(268) 551.46

***Nauchnye resul'taty ekspeditsii na "Malygine" na zemliu Frantsa-Iosifa v 1932 g.** [Scientific results of the expedition of the ice breaker "Malygin" to Franz-Josef Land in 1932.] *Leningrad. Arkticheskiĭ Nauchno-Issledovatel'skiĭ Institut, Trudy*, v. 34, **1935.** 52 p. figs., tables, refs. English summaries. **DLC**—Contains several articles by different authors on oceanographic ice and on temperature, salinity and alkalinity of sea surface water in the Barents Sea and Franz Josef Land region (to 82°29′N) during the 1932 expedition of the "Malygin" under the direction of N. V. Pinegin. A new meteorological station was established on Rudolph Island and Tikhaia (Calm) Bay Station was supplied with provisions. Oceanographic work, cosmic ray observations, magnetic work, atmospheric electricity and radioactivity observations as well as hydrological and meteorological observations were made and are presented in detail in articles (for Aug. and Sept. 1932). Ice condition for spring 1933 are also reviewed in an article by A. F. Laktionov. *Subject Headings:* **1. Observational data 2. Arctic oceanography 3. "Malygin" Expedition, 1932 4. Barents Sea 5. Franz Josef Land 6. Rudolph Island. I. Senilova, Z. P. II. Pinegin, N. V. III. Laktionov, A. F.**—*M.R.*

5I–57 551.583:582(98)

Ording, Asbjørn, **Klimaforandringene og de polare furuskoger.** [Climatic changes and the polar pine forests.] *Tidsskrift for Skogbruk*, Oslo, 43(6):171–177, June **1935.** 2 figs. **DLC**—The discussion includes a review of works by Juul, Opsahl, Hagem and Bathen. The retreat of pine forests above the Arctic circle as a function of climatic change is presented in pollen diagrams supporting Bathen's theory. Systematic investigations of the local climate in Tromsö district are suggested to determine the state of the maritime pine forests. *Subject Headings:* **1. Climatic changes 2. Pollen analysis 3. Forest succession, Arctic.**—*W.N.*

5I–58 551.594.1/2(268)

*Scholz, J., **Luftelektrische Messungen auf Franz-Josefs-Land während des II. Internationalen Polarjahres 1932–33.** [Measurements of atmospheric electricity on Franz Josef Land undertaken during the 2nd International Polar Year, 1932–33.] *Leningrad. Arkticheskiĭ Nauchno-issledovatel'skiĭ Institut, Trudy*, v. 16, **1935.** 169 p. 23 figs., 18 tables, 6 refs. (p. 59). Review by H.

Israël-Kohler in: *Meteorologische Zeitschrift*, 53:483–484, **1936.** **DLC**—Results of observations made by the author, a German scientist delegated to Franz Josef Land during the Second International Polar Year, with tables giving measurements of potential gradient, ion count p. 64–169. *Subject Headings:* **1. Atmospheric electricity data 2. International Polar Year, 1932–33 3. Franz Josef Land. I. Israël-Kohler, H.**—*Arctic Bibliography, No. 15525.*

1936

5I–59 551.521

Kalitin, N. N., **O velichinakh rasseiannoĭ radiatsii atmosfery v Arktike.** [The amounts of scattered radiation of the atmosphere in the Arctic.] *Arktika*, No. 4:121–135, **1936.** 6 figs., 2 tables, 6 refs. English summary p. 135. **DLC**—Description of apparatus used for observation of scattered radiation and data from 6 stations in Russian Arctic section. Owing to the weather conditions in the Arctic, the scattered radiation is very great. In Mostyr, situated at the mouth of the Lena River, on May 21, 1933, 523 calories per sq. cm of horizontal surface for 24 hours was observed. *Subject Headings:* **1. Scattered radiation 2. Soviet Arctic.**—*N.A.S.*

5I–60 551.481.1(98)551.511(268)

Vize, V. IU. and Davydov, L. K. (*eds.*), **Issledovannost' rek arkticheskoĭ zony.** [Degree of knowledge on the rivers of the Arctic region.] *Leningrad. Arkticheskii Nauchno-issledovatel'skii Institut, Trudy*, v. 36, **1936.** 84 p. 7 figs., 26 tables, 30 refs. English summary p. 84. **DLC**—This monograph contains 3 fundamental papers on the hydrological and climatological aspects of the great rivers which flow into the Arctic Ocean from the continent of Asia. The first paper by VIZE on the "Knowledge of the rivers in the Arctic region" describes expeditions of the 17, 18 and 19 centuries which were geographical and the research in the last 50 years—at first mainly hydrographic, but in the past 15 years systematic (60 stations) in the study of hydrometeorological and limnological characteristics of the rivers. 2) The article gives statistics as to such surveys as are or have been made. The second article by N. D. ANTONOV gives elaborate climatic or meteorological data for calculation of heat budget of the Kara Sea and the effect of these rivers on the quantity of heat available. The third article by B. D. ZAĬKO does the same for the Laptev and East Siberian seas and the rivers that drain into these seas. The calculations take into account temperature, radiation, cloudiness, ice, precipitation, runoff and many other factors. It is admitted that the calculations are rough, but are indicative. *Subject Headings:* **1. Heat balance of Arctic Seas 2. Heat balance of Arctic rivers 3. Kara Sea 4. Laptev Sea 5. East Siberian Sea.**—*M.R.*

1937

5I–61 551.594.7:621.396:551.515.4(268)

Arkhangel'skiĭ, B. F., **Rasprostranenie radiovoln v severnykh shirotakh.** [Propagation of radio waves in northern latitudes.] *Leningrad. Arkticheskii Nauchno-issledovatel'skii Institut, Trudy*, 78:17–20, **1937.** 5 figs., English summary p. 20. **DLC**—Report on observations made in 1932/33 on Franz-Josef Land, measuring the intensity of radio waves in the diapasone 20–2000 m, transmitted from stations with a distance from 2500 to 10,000 km. The influence of ultraviolet and corpuscular solar radiation during the polar day and night is discussed. The relation of sferics to the main regions of thunderstorm activity, presented on a map, is shown. *Subject Headings:* **1. Radio wave propagation 2. Sferics 3. Thunderstorm activity 4. Franz-Josef Land.**—*A.A.*

5I–62 551.583:551.513(268)

*Berezkin, V. A., **Poteplenie v Arktike i usilenie tsirkuliatsii vod Poliarnogo basseĭna.** [Warming in the Arctic and increase of water circulation in the Polar Basin.] *Morskoĭ Sbornik*, Leningrad, 20(4):105–132, April **1937.** 13 figs., 7 tables, refs. **DLC.** Review in *Problemy Arktiki*, No. 4:173–174, **1937.** **DLC**—A great deal of data is presented to show the warming which is evident in Arctic waters during the past decades (1910–30). The unusual feature of this presentation is the attempt to tie in an increase in the general circulation with the other factors which have been cited. The Iceland Low is shown to be deeper in the 1921–30 decade by −4.5 mb and the Siberian High +3.2 mb more intensive than normal. SCHERHAG's charts of N. Hemisphere circulation for 1911–20 and 1921–30 are given as further proof. This increase in circulation is then tied in with an increase in oceanic circulation as well as melting of ice in bordering seas of the Arctic and the N. Atlantic. *Subject Headings:* **1. Warming of Arctic 2. General circulation increase 3. Arctic Ocean circulation 4. Arctic.**—*M.R.*

5I–63 551.508.21(02)

Berezkin, V. A., **Rukovodstvo po aktinometrii dlia poliarnykh gidrometeorologicheskikh stantsiĭ, glavnogo upravleniia severnogo morskogo puti.** [Handbook for actinometry for polar hydrometeorological stations along the Northern Sea Routes.] Leningrad, Izdat. Glavsevmorputi,

1937. 126 p. 26 figs., 2 tables, numerous eqs. **DLC**—A theoretical and practical manual observing direct and reflected solar radiation and maintaining equipment at Arctic stations of U.S.S.R. The types of instruments, construction and calibration of instruments, installatio corrections to be applied in each case, and the working up of records are taken up systematica and illustrated where possible. Chap. I discusses the recording of direct solar radiation by me of the Ångström and Michelson actinometers and the Voloshinov pyranograph. Chap. II treat the measurements of total and reflected radiation, with detailed consideration of the Ianishev pyranometer, the Kalitin albedometer and the Arago-Devi-Kalitin actinometer. (*Same item* 5–19, May 1950, *MAB.*) *Subject Headings:* **1. Actinometry 2. Arctic solar radiation 3. Manu 4. Arctic.**—*M.R.*

5I–64 551.594.1(

*Gerasimenko, V. I., **Obzor atmosferno-elektricheskikh nabliudenii v poliarnykh stran** [Review of atmospheric electricity observations in polar regions.] *Problemy Arktiki*, No. 3:83 **1937.** 4 figs., 7 tables, 16 refs. English summary p. 97–98. **DWB**—Results of observation the Arctic since late 19th century give only an idea of the diurnal and annual course of the poten gradient, as well as some preliminary data on the conductivity of the air and ionization of atmosphere. Stresses need for a permanent observatory in the polar regions. *Subject Head* **1. Atmospheric electricity data 2. Arctic Basin.**—*From English summary.*

5I–65 551.506:551.577

*Kozlov, M. P., **Ob izmerenii zimnikh osadkov na poliarnykh stantsiiakh.** [Measuremer winter precipitation at polar stations.] *Problemy Arktiki*, No. 2:53–59, **1937.** 12 tables, English summary p. 59. **DWB**—Advocates measurement of height and density of snow cov supplement measurement with rain gages as the latter do not give sufficiently reliable results. T show values obtained by both methods at several stations in the Russian Arctic. *Subject Hea* **1. Precipitation measurement 2. Arctic.**—*From English summary.*

5I–66 551.524.3

Scherhag, R., **Die Erwärmung der Arktis.** [The warming of the Arctic.] *Interna Council for the Exploration of the Sea, Copenhagen, Journal*, 12:263–276, **1937.** See also *Meteorol Magazine*, London, 73:29–32, **1938. DLC**—Calls attention to increased mildness of winte temperate zone during past 100 years and retreat of the ice. Attributed to increase in Gulf St drift due to a 225-year cycle of atmospheric circulation, now about its maximum. (*Same it* G–192 in Aug. 1950, *MAB.*) *Subject Headings:* **1. Climatic variations 2. Historical cli 3. Arctic.**—*C.E.P.B.*

5I–67 551.524.3

*Tikhomirov, Evgenii Ivanovich, **Khod sredneĭ temperatury vozdukha v zimnee vre poliarnykh raĭonakh.** [The variations of mean air temperature during winter in polar reg *Problemy Arktiki*, No. 2:25–42, **1937.** 11 figs., 9 tables, 10 refs. **DLC**—A peculiar abnorma the annual course of temperature is noticed in the Arctic region. The annual minimum may in any winter month as is shown by tables containing data of mean monthly temperatures f winter season obtained at 4 Arctic stations. Anomalous distribution of temperature is sho polar charts. *Subject Headings:* **1. Climate of Soviet Arctic 2. Air temperature data 3. V temperatures 4. Arctic Regions.**—*N.A.S.*

5I–68 551.521.

*U.S.S.R. Komitet po Provedeniiu 2-go Mezhdunarodnogo Poliarnogo Goda, **Akti tricheskie nabliudeniia Vtorogo Mezhdunarodnogo Poliarnogo Goda, 1932–1933.** [Actino observations of the 2nd International Polar Year, 1932–1933.] Leningrad, Glavnaia Geofizicl Observatoriia, **1937.** 48 p. entirely tables. **DLC**—The actinometric data collected duri Second International Polar Year, 1932–1933, consist of solar radiation, total and diffuse ra (Kalitin pyranometers), total and diffuse illumination. The intensities at a given time are ex as radiation per min/cm² of perpendicular and horizontal surfaces. The localities at wh servations were made are: Selo Poliarnoe, Tikhaia (Calm) Bay, Matochkin Shar, Mastyn Bay, Lawrence Bay and Cape Dezhnev (East Cape). (*Same item as* 5G–61, July 1954, *Subject Headings:* **1. Global radiation data 2. Diffuse radiation 3. Solar radiation in 4. Kalitin pyranometer 5. International Polar Year, 1932–1933 6. Soviet Arctic. I. Kalitin II. Leningrad. Glavnaia Geofizicheskaia Observatoriia.**—*I.L.D.*

5I–69 551.50

*U.S.S.R. Komitet po Provedeniiu 2-go Mezhdunarodnogo Poliarnogo Goda [and] Len Glavnaia Geofizicheskaia Observatoriia. Otdel Klimatologii, **Meteorologicheskie nabli**

orogo mezhdunarodnogo poliarnogo goda 1932–1933. [Meteorological observations of the second ıternational Polar Year, 1932–1933.] Leningrad, TSUEGMS, **1936–1937.** 3 v. all tables. In ussian and English. Imprint varies. **DLC**—Extensive tabular data from stations in the U.S.S.R. ressure, wind speed and direction, cloud forms, air temperature, vapor pressure and relative humidy were observed 6 times daily (observations of some elements lacking for some stations). A ımmary of daily weather phenomena is given in code. V. 1 contains data for 20 stations northward om 70°N lat., V. 2 . . . for 26 stations from 70°–65°N lat. and V. 3 . . . for 12 stations from 5°–60°N lat. and V. 4 . . . for 4 stations southward from 60°N lat. Geographic coordinates, titudes and name of each observer of each station are included. *Subject Headings:* **1. Observational ata 2. International Polar Year, 1932–1933 3. Soviet Arctic. I. Kedrolivanskiĭ, V. N.** (*ed.*)—*I.L.R.*

5I–70 551.311.184(268)

*Vize, V. IU., **Dreĭf l'dov iz Karskogo moria v Grenlandskoe.** [Ice drift from the Kara Sea to the Greenland Sea.] *Problemy Arktiki*, No. 1:103–116, **1937.** 2 figs. (1 fold.), 5 tables, refs. nglish summary p. 114–116. **DWB**—Shows results of experiment carried out from 1930–1934 ith wooden buoys to determine the ice drift from the Kara Sea into the Arctic Basin. One chart ows the 62 points at which the buoys were cast adrift and another, their probable course. A ble shows date and place of casting adrift for 34 buoys, date and place of finding them and the ıration of the drift. Author's conclusions: 1) velocity of drift from the Kara into the Norwegian ea is subject to fluctuations and 2) in the second half of the 1934 and the first half of 1935 the ice oved with unusual velocity from the northern part of the Kara Sea into the region of the East reenland Current. This unusual swift ice-drift was due to a strong increase in intensity of circulaon in the extreme N.E. part of the Atlantic Ocean and adjacent portion of the Polar basin and to xtraordinarily high temperature of the Atlantic waters. *Subject Headings:* **1. Ice drift 2. Arctic asin.**—*From English summary.*

5I–71 551.509:551.311.181

Vize, V. IU., **Sovremennoe sostoianie voprosa o ledovykh prognozakh.** [The present state f the problem on ice forecasting.] *Problemy Arktiki*, No. 1:67–80, **1937.** 4 figs., refs. English ımmary p. 78–80. **DWB**—Discusses the effect of the distribution of atmospheric pressure and the eat of the Atlantic current upon ice conditions. Four isobaric charts showing favorable and unvorable ice conditions for selected months are presented. Author's investigations show "that fficult ice-years in the Arctic correspond to a feebler general circulation of the atmosphere, favorle ice years—to a more intensive one." States also that heat is carried into the Polar seas not only y sea and air currents but also by rivers. *Subject Headings:* **1. Ice forecasting 2. Pressure disibution 3. Kara Sea 4. Barents Sea.**—*From English summary.*

5I–72 551.583.14:551.513(98)

Vize, V. IU., **Prichina potepleniia Arktiki.** [Cause of the warming of the Arctic.] *Sovetskaia rktika*, Leningrad, No. 1:59–68, **1937.** 4 figs., refs. **DLC**—General facts regarding the warming f the atmosphere and sea waters of the Arctic which began on a large scale in 1920 and continued the date of this article. The atmospheric pressure pattern for Jan.–March in the North Altantic years when the summer temperature of waters in the Barents Sea was well above normal and ell below normal are illustrated by two charts; in the first case there was one well defined and deep nter in Denmark Strait, embracing all the area from Labrador and New England to the Baltic nd Spitsbergen; in the second case two weak centers, one in Davis Strait and one in the Spitsbergen ea, with a ridge between. Pressure anomaly for 1921–30 for entire earth as well as for Polar gions, shows the interrelationships of different areas, indicating that the warming of the Arctic linked to global circulation patterns (and anomalies) which are probably caused by extraterstrial influences. *Subject Headings:* **1. Warming of Arctic 2. Pressure anomalies 3. General rculation anomalies 4. Arctic.**—*M.R.*

1938

5I–73 551.594.7(268)

*†Arkhangel'skiĭ, B. F. and Pabo, N. V., **Rasprostranenie radiovoln v vysokikh shirotakh.** [Radio ave propagation in high latitudes.] *Leningrad. Arkticheskiĭ Nauchno-issledovatel'skiĭ Institut, rudy*, v. 124, **1938.** 88 p. 55 figs., 6 tables, refs. at end of each chapter. **DLC**—A very thorough eatment of all available data on Arctic troposphere and ionospheric radio propagation conditions nd their disturbance by solar, magnetic, auroral and static (sferics) activity. Actual recorder cords as well as derived diagrams, tables and curves are presented. Numerous references are ven to the sources (mostly 1932–1937 in Russian periodicals). Theoretical considerations are not eglected but applications to study of atmosphere—especially the upper layers—and the aurora, nosphere, terrestrial magnetism and atmospheric electricity are emphasized. The study is based

on data obtained in 1932/33 and 1934/35 at Tikhaia (Calm) Bay in Franz Josef Land, and ot Polar Year stations in 1932/33. *Subject Headings:* **1. Radio wave propagation 2. Ionosph 3. Tropospheric propagation 4. Sferics 5. Auroral research 6. Arctic geophysical resea 7. Tikhaia (Calm) Bay, Franz Josef Land.**—*M.R.*

5I–74 551.506.7(2

*†Guterman, I. G., **Osobennosti stroeniia atmosfery nad poliarnymi oblastiami.** [Some pe liarities of the atmosphere over the Arctic region.] *Leningrad. Arkticheskiĭ Nauchno-Issle vatel'skiĭ Institut, Trudy*, v. 122, **1938.** 79 p. 23 figs., 43 tables, 31 refs. **DLC**—This monogr consists of a very thorough analysis of results of 221 aerological soundings from 1932–35 at Tikl Bay (Franz Josef Land). The highest of the 178 radiosonde ascents reached 20 km. Three sound balloon, 18 airplane and 22 kite flights are also analyzed. The ascents were fairly well distribu throughout the 12 months of the year. A short analytical description of the climate of Franz J Land is included by way of introduction (temperature, wind frequency, temperature of winds f various quarters, general circulation, effect of sea circulation and temperature, turbulent exchar followed by discussion of vertical temperature gradient, height of 0°C isotherm, inversion (he and frequency of various height intervals) actual temperature (frequency by various heights seasons), temperature of air masses, annual range of temperature aloft, inter-monthly variati inter-daily variations, extremes, tropopause temperature and height (*see item* 5D–94, April 1 *MAB*) compared to Slutsk and other stations at low latitudes; tropopause types, correlatio height, temperature and pressure; pressure variations aloft and, finally, tephigram analysis o mass. *Subject Headings:* **1. Upper air data 2. Upper air climatology 3. Tropopause Tikhaia Bay, Franz Josef Land.**—*M.R.*

5I–75 551.521.1:551.576(484.2

Lindholm, F., **Beitrag zum polaren Lichtklima.** [Contribution to the knowledge of polar l climate.] *Meteorologische Zeitschrift, Bioklimatische Beiblätter*, 5(1):26–30, **1938.** **DWB**—Meas ments of the light intensity in Spitsbergen (77°54′N) were made with an Eder-Hecht grey w photometer. The increase of the blue violet light (3660–4400 A) is very rapid in spring when sun first appears over the horizon. The values rise until summer solstice and reach values c parable to those measured in 50° latitude. The variation between cloudy and sunny days is small compared to stations in lower latitudes. The conclusion is reached that in Arctic reg cloudiness has much less influence on light intensities than elsewhere. *Subject Headings:* **1. I intensity 2. Cloudiness effects 3. Spitsbergen 4. Arctic Regions.**—*H. Landsberg.*

5I–76 551.556:551.311.18

Nazarov, V., **Opyt ucheta vozdushnykh potokov dlia ledovykh prognozov.** [Experim calculation of air current intensities for ice forecasts.] *Meteorologiia i Gidrologiia*, 4(4):118 **1938. DLC**—The influence of air currents on the movement of ice fields is recognized. Experi were conducted to determine the prevalence of wind over a day, month, and year for Dickson Uedineniya Island meteorological stations. The observations were plotted to present wind vector of forces for any given period. Data for the 1917 to 1931 period show that the vector of pull at the Dickson Island station was equal to 1.7 m/sec and its direction was from south to n *Subject Headings:* **1. Wind effects 2. Arctic ice movement 3. Arctic Regions.**—*SIPRE ography, U2308.*

5I–77 551.556:551.311.18

Nazarov, V., **Nekotorye dannye o skorosti poverkhnostnogo techeniia i dreĭfa l'da pod deĭs vetra.** [Some data on the speed of surface flow and the drift of ice under the influence of w *Meteorologiia i Gidrologiia*, 4(4):122, **1938. DLC**—A close agreement was found between obs and calculated values for surface flow velocities in Polar waters. These velocities were obtain multiplying the wind velocities by a constant of 0.0127. The speed of drifting ice was obtain multiplying wind velocities by a constant of 0.0203. Both constants were used in determini ice drift and current flow velocities at an average ice coverage of 50%. *Subject Headings:* **drift 2. Wind effects 3. Arctic Regions.**—*SIPRE Bibliography, U2274.*

5I–78 551.5:91.0

Panov, D. G., **Priroda tsentral'noĭ chasti Arktiki i nauchnye raboty sovetskoĭ dreĭfuiu stantsii "Severnyĭ Polius."** [Nature of the central Arctic and the scientific work of the d station "Severnyĭ Polius."] *Vsesoiuznoe Geograficheskoe Obshchestvo, Leningrad, Izvestiia*, 70(3 349, **1938.** 9 maps, 30 refs. **DLC**—Early charts and ideas of Arctic (chart of Vremensky 1070; Beheim, 1492; Barents, 1598; Mercator, 1569 and Lomonosov, 1754, reproduced in a and later work of Nordenskiöld, Vize, O. Schmidt, Wilkins, Hobbs, Sverdrup, Zubov, and Papanin on boundaries of ice, drift of ice and currents, temperature, salinity, depth, cl

nospheric circulation, wind regime, etc. The importance of the "Severnyĭ Polius" Expedition ults is stressed. *Subject Headings:* **1. Arctic research 2. Arctic navigation charts 3. Papanin pedition, 1937–1938 4. Arctic Basin.**—*M.R.*

5I–79 551.556:551.311.184(268)

Shuleĭkin, V. V., **Dreĭf ledianykh poleĭ.** [Drift of ice fields.] *Akademiia Nauk SSSR, Izstiia, Ser. Geofiz.*, No. 1:3–22, **1938.** 7 figs., 2 tables, 54 eqs. English summary p. 22. **DLC**—theoretical paper in which the author, after having reviewed critically the existing theoretical inions on the connection and dependence of wind and drift (ice floes) velocities—constructs his n theory of the phenomenon and determines the relation between the angle of wind direction and direction of the drift. He discusses further the probable cause of the "counter" flow discovered members of the station "Severnyĭ Polius" on a drifting ice floe. The theoretical deductions of author applied to the analysis of results of direct observations made at the station during the nous drift show perfect agreement of the theory with actual observations. *Subject Headings:* **Ice drift 2. Wind effects 3. Papanin Expedition, 1937–1938 4. Arctic Basin.**—*A.M.P.*

5I–80 551.571(98)

Tikhomirov, Evgeniĭ Ivanovich, **Zimniaia vlazhnost' vozdukha v poliarnykh stranakh i sviannye s neĭ iavleniia.** [Winter humidity in polar regions and associated phenomena.] *Problemy ktiki*, No. 2:63–74, **1938.** 2 figs., 8 tables, 11 refs. English summary p. 73–74. **DLC**—Using observations made by Soviet Arctic stations, the author shows that the method for determining mean monthly temperatures, recommended by A. Wegener, gives a fairly good idea of the uration of air in relation to ice. Curious phenomena of frost clouds forming near animals and companied by specific freezing of exhaled vapor are described. *Subject Headings:* **1. Humidity easurement 2. Frost clouds 3. Arctic Regions.**—*N.A.S.*

5I–81 551.311.181(268)

Zubov, N. N., **O predel'noĭ tolshchine morskikh mnogoletnikh l'dov.** [On the maximum ckness of perennial sea ice.] *Meteorologiia i Gidrologiia*, 4(4):123–131, **1938.** tables, diagrs. C—The thickness of sea ice depends upon the number of degree-days of below 0°C temperatures, snow cover, and the melting rate. It was calculated that the maximum thickness does not ceed 23.8 m. under ideal conditions. The thickness of sea ice is not uniform during the first 10 rs of growth. The thickness becomes more uniform and its upper surface relatively smooth e to summer thawing of hummocky ice and winter filling of crevices with snow. The growth of cover from 300 to 350 cm requires about 3 to 4 years in Arctic waters at 6000 degree-days of ow 0°C temperatures and a loss of 30 to 50 cm due to summer thawing. *Subject Headings:* **Sea ice formation 2. Arctic.**—*SIPRE* Bibliography, *U2307.*

1939

5I–82 551.5:91.04(09)

Breitfuss, Leonid L'vovich, **Arktis.** [Arctic.] Berlin, Dietrich Reimer (Andrew & Steiner), **39.** 195 p. charts, 2 fold. maps (in pocket), 42 refs. In German and English. Foreword by lhelm Filchner. **DLC**—Pt. I, Introduction, discusses importance of the Arctic, its geographic its, surface structure, climate; forest limits, permafrost and the seas and their limits; sea currents tides; warming of the Arctic; Polar exploration and its methods and a summary of the explorans of the Northeast Passage and the Northwest Passage. Pt. II, The Most Important Voyages Events in the Arctic Since the Beginning of our History, lists in chronological order with brief nment, expeditions from about 860 to 1938. An index of personnel and ship's names is included. ps (scale 1:10,000,000) include the above information as well as location of polar stations, exdition routes, etc. *Subject Headings:* **1. Arctic expeditions 2. History of Arctic exploration Arctic.**—*M.L.R.*

5I–83 551.464(268)

*Brodskiĭ, A. I.; Radochenko, N. P. and Smolenskaia, B. L., **Izotopnyĭ sostav arkticheskikh vod dov.** [Isotope content of Arctic waters and ice.] *Zhurnal Fizicheskoĭ Khimii*, Leningrad, (10):1494–1501, **1939.** 5 tables, chart, 6 refs. **DLC**—Results of determinations of isotope ntent of 18 samples of Arctic water and ice ("Severnyĭ Polius" drifting station, Chuckchee, st Siberian, Kara and Greenland seas and north Arctic Ocean) are presented and discussed. The mples differ greatly in their isotope content and can be divided into 3 groups with considerable itive and negative deviations from the normal content of heavy isotopes of hydrogen and oxygen. rlier explanations of different densities of sea and river water which were based on chemical lysis by evaporation, are proven to be wrong. Some modifications of the earlier method of topic analysis increase its accuracy and reliability. A chart shows currents in Arctic Basin and

adjacent seas. Data are presented in tabular form for various places and expeditions. *Su*
Headings: **1. Arctic ocean currents 2. Isotope content of sea 3. Isotope content of ice 4. A**
Basin.—*A.M.P.*

5I–84 551.510.41:546.264 551.46(

*Buch, Kurt, **Kohlensäure in Atmosphäre und Meer an der Grenze zum Arktikum.** [Ca
dioxide in the atmosphere and the sea on the border of the Arctic Ocean.] *Åbo, Finland. Akad*
Acta Academiae Åboensis, Mathematica et Physica, 11(12), **1939.** 41 p. 4 figs., 4 tables, 14
English summary p. 35–39. **DSI-M**—Based on samples taken while sailing between Norway
Spitsbergen, Aug. 10–24, 1936. Chart shows places at which samples were taken and tables pr
data. Results of observations at Petsamo also given. Values from Petsamo high when comp
to those from Spitsbergen (on an average∼2) and show that Arctic air of latter place differs
that which in meteorological practice is termed Arctic. *Subject Headings:* **1. Atmospheric**
position 2. Carbon dioxide in the atmosphere 3. Sea water composition 4. Arctic Ocean.—
English summary.

5I–85 551.52

*Chaplygin, E. I., **O temperature pochvy v Arktike.** [Soil temperature in the Arctic.] *Pro*
Arktiki, No. 9:67–74, **1939.** 2 figs., 6 tables. **DWB.** Also: Sumgin, M., **Ob izmereniiakh**
peratury pochvy. (Po povodu stat'i E. I. Chaplygina "O temperature pochvy v Arktike.")
temperature measurements. (In reference to the article by E. I. Chaplygin on the "Soil temper
of the Arctic.")] *Ibid.,* No. 5:116, **1940. DWB**—Observations on soil temperature at 0, 1
40, 80 and 160 cm depth at Cape Cheliuskin and Cape Schmidt (1933–1934) are tabulated for
month (averages). Extreme temperatures, number of days with frost and mean depth of
cover are also tabulated for each month. Data on soil temperature at various depths are also s
in cross-section isopleth (time depth) charts and time temperature graphs for each respective c
In addition the (daily and yearly) amplitudes of temperature at each depth are tabulate
discussed. *Subject Headings:* **1. Soil temperature data 2. Arctic soil temperatures 3.**
Schmidt 4. Cape Cheliuskin 5. Arctic Regions. I. Sumgin, Mikhail Ivanovich.—*M.R.*

5I–86 551.521.14:551.

*Chernigovskiĭ, N. T., **O radiatsionnykh svoĭstvakh snegovogo pokrova i l'da moreĭ.** [Rad
properties of snow cover and ice in Arctic Seas.] *Problemy Arktiki,* No. 6:31–38, **1939.** 8 f
9 refs. **DLC**—To determine the snow and ice albedo, experiments were made on Uedineniya
in 1938 by V. I. Sokol'skiĭ, Tiksi Bay in 1937 by N. M. Kopylov; Cape Schmidt in 1936
by M. A. Kuznetzov and Tikhaia (Calm) Bay (Franz Josef Land) in 1936 by G. V. Biurg
skaia. Mean monthly snow and ice albedo for these are given in tables, which show that the
monthly snow albedo of the Arctic varies little with latitude during March (87%), April (86
and May (83–84%). Only the southernmost point, Tiksi Bay, shows 80% during May.
albedo decreases in June to 70%, in July to 50%. The mean annual variations of ice albedo
from snow albedo; during spring ice albedo is about 40% in April, 45% in May–June and 5
July. It increases during Aug. and Sept. to 50–60%. Methods of experimentation are dis
Subject Headings: **1. Albedo of snow 2. Albedo of ice 3. Soviet Arctic.**—*M.W.S.*

5I–87 551.506.5:551.311.18

*Fedorov, E. K. and Shirshov, P. P., **Nauchnye raboty dreĭfuiushcheĭ zimovki.** [The sc
work of the drifting expedition.] *Meteorologiia i Gidrologiia,* No. 6:41–45, **1937.** Also: Us
G. A., **Pervye itogi nauchnoĭ raboty Papanintsev.** [First scientific results of the Papanin
tion.] *Ibid.,* No. 2:3–8, **1938.** And: Tikhomirov, E. I., **Pervyĭ mesiats meteorologich**
nabliudeniĭ na dreĭfuiushcheĭ l'dine. [The first month of meteorological observations
drifting ice field.] *Ibid.,* No. 6:93–96, **1937;** also in *Problemy Arktiki,* No. 4:44–48, **1937.**
Shirshov, P. P. and Fedorov, E. K., **O nauchnykh rabotakh dreĭfuiushcheĭ stantsii 1938.** [So
work carried out on the drifting station during 1938.] *Problemy Arktiki,* No. 2:9–13, **1938.**
narrative account of the expedition in English, *see* Fedorov, E. K., **Scientific work of ou**
expedition. Moscow, **1939.** 29 p. illus. **DLC**—1) A discussion of the plans, methods an
ment of the projected expedition to the North Pole, 1937. 2) Author enumerates the contr
to scientific research made by the drifting station "Severnyĭ Polius." 3) Meteorological obser
made every six hours during the period from May 22 to June 22, 1937 are given in tables
cussed. 4) Description, with some discussion, of observations made by the crew of the
drifting station "Severnyĭ Polius." The pamphlet in English is a narrative account of the
expedition "Severnyĭ Polius" 1937–1938. *Subject Headings:* **1. Arctic expeditions 2.**
Expedition, 1937–1938 3. Arctic Ocean. I. Ushakov, G. A. II. Tikhomirov, E. I.—*A.A.*

5I–88 551.508.53/4

Gol'tsman, M. I., **O nekotorykh anemometricheskikh priborakh dlia Arktiki.** [On anemometers the Artic.] *Problemy Arktiki*, No. 12:29–38, **1939.** 10 figs., 4 refs. **DWB**—Both cup and sure-tube anemometers and anemographs for use under severe temperature and frost conditions as obtained in the Arctic, are described and illustrated in detail. The two instruments de- ped by the author are called anemorhumbometer and maximal anemometer (hurricane meter), former with electrical recording and the second with pneumatic or mechanical recording devices. latter is thought to be more accurate under Arctic conditions. It is a modification of the Dines sure anemometer. *Subject Headings:* **1. Anemometers 2. Anemographs 3. Wind recording rctic.**—*M.R.*

5I–89 551.571(98)

Gol'tsman, M. I., **Ob izmerenii vlazhnosti vozdukha pri nizkikh otretsatel'nykh temperaturakh.** midity measurements of air at low negative temperatures.] *Problemy Arktiki*, No. 1:39–53, **9.** 7 figs., table, 8 refs. **DWB**—Two methods are presented for accurate determination of idity at low temperatures as are experienced at Arctic weather stations. The first method in- es elaborate equipment using the mass absorption method. Two apparatuses operating simul- ously gave results which agree within 3% R.H. in 89% of the cases. The second method is the rmoelectric psychrometer method" giving accuracy within ±5% R.H. at −25°C (at Irkutsk). types of equipment are illustrated in detail. They are suitable for control of accuracy of nary humidity observations in the Arctic. Nomograms show R.H., dew point and maritime tionship at low temperatures. *Subject Headings:* **1. Humidity measurement 2. Psychrometer ration 3. Thermoelectric psychrometers 4. Arctic.**—*M.R.*

5I–90 551.510.41:546.214(984)

Hamilton, R. A., **High latitude ozone measurements.** *Royal Meteorological Society, Quarterly rnal*, 65(280):214, April **1939.** **DWB**—Observations at Brandy Bay, North East Land (80°23″N, 31′E), at the base of the Oxford University Expedition, 1935–36 "to determine the amount of ne in the upper atmosphere by measuring the absorption of the ultraviolet light in the spectrum he Pole star." Equipment and photometry described. Table I gives mean value for ozone kness for each day, Table II shows values at Tromsö and North East Land. "Results are lished because they were taken at a much higher latitude than any hitherto and they seem to v that the autumn fall, observed at all latitudes, is continued through the winter followed by a len rise in the spring. *Subject Headings:* **1. Ozone measurement technique 2. Oxford Uni- ity Expedition, 1935–1936 3. Brandy Bay, North East Land.**—*M.L.R.*

5I–91 551.583:59(268)

Jensen, Adolf Severin, **Concerning a change of climate during recent decades in the Arctic Subarctic regions, from Greenland in the west to Eurasia in the east, and contemporary bio- al and geophysical changes.** (*K.*) *Danske Videnskabernes Selskabs, Biologiske Meddelelser*, 3), **1939.** 75+p. fig., 2 charts, 2 tables, refs. **DLC**—Area covered by this study includes nland; Iceland; Jan Mayen; Barents Sea, Murman Coast, White Sea, Novaya Zemlya, Kara Spitsbergen, Bear Island, Franz Josef Land and Northern Land. Cites evidence from his investigation (begun in 1908) and that of others to show that "many southern (boreal) species nimals . . . have in recent years been able to extend their area of distribution further north, st the southern limit for certain northern (Arctic) species has retreated northwards." Three ors responsible for these changes—marine currents, ice conditions and air temperatures—are ussed at length. *Subject Headings:* **1. Climatic changes 2. Animal distribution 3. Arctic.**— *.R.*

5I–92 551.521(98)

Kalitin, N. N., **Maksimal'nye sutochnye summy rasseiannoĭ radiatsii atmosfery v Arktike.** ximum daily totals of diffuse atmospheric radiation in the Arctic.] *Problemy Arktiki*, No. -66, **1939.** 3 figs., 4 tables. **DWB**—Tables and graphs show relative seasonal variation in mum daily total reflected radiation (from the sky or clouds) at stations ranging from Tikhaia m) Bay in the Arctic to Karadag in the sub-tropics. Also the variation in diffuse radiation 8 types of cloud cover at different solar elevations (5°–50°) is shown in a table. The arctic ons of Tiksi Bay and Uedineniya Island show June maximum >560 ly/min on a horizontal ce. At the more southerly stations the June values are only about half as great. However, are twice as many hours of daylight in the Arctic summer, where it is not dark for over 2 hs (70°N) as at 40°N where there is 8–10 hours of darkness each day even in June. *Subject ings:* **1. Diffuse radiation 2. Cloud type effects on radiation 3. Arctic Regions.**—*M.R.*

5I–93 551.

Kozlov, M. P., **Nekotorye zamechaniia o rabote gigrografa i termografa v poliarnykh uslovi** [Remarks on the efficiency of the hygrograph and the thermograph under polar conditions.] *lemy Arktiki*, No. 10/11:143–146, **1939.** 3 figs. **DLC**—Details of harmful effects and mea taken to counteract effects of drifting snow, ice (rime), frost and cold temperatures etc. on tioning of hygrograph and thermograph mechanisms under severe conditions such as were at Dickson Island in the Soviet Arctic. The clockwork, record sheets, ink, pens, humidity ele and ventilation of Richardson type recording instruments are subject to failure, poor functioni errors, especially when clogged up with fine drifted snow. Not too much can be done exce improving quality of clockwork, balance of pen, type of shield and humidity element prote *Subject Headings:* **1. Instrument protection against ice 2. Arctic observations 3. Hygrothe graphs.**—*M.R.*

5I–94 551.506.5

*Lindholm, Ferdinand, **Swedish Polar Year Expedition, Sveagruvan, Spitzbergen, 1932– General introduction. Terrestrial magnetism.** Stockholm, Swedish National Committe Geodesy and Geophysics, **1939.** 77p. 7 figs., plate, numerous tables, refs. Also: *Olson, Hi **Meteorological observations at Mount Nordenskiöld, Spitzbergen during the International Year 1932–1933.** *Sweden. Statens Meteorologisk-Hydrografiska Anstalt, Meddelanden*, Stock 6(5), **1936.** 83 p. extensive tables. **DLC**—The first report gives a general account of Sw activities during the Polar Year. This report gives in extenso the hourly geomagnetic data the magnetic station at Sveagruvan. A harmonic analysis of the results is made. The progr this station also included thrice-hourly auroral observations and twice-weekly balloon as The second paper reports on activities at Mt. Nordenskiöld. Tables show hourly pressure perature, relative humidity and wind direction and speed for the period and duration of sunshine for Aug.–Oct. 1932 and Feb.–Aug. 1933. Daily hydrometeors are indicated by national code. Geographic coordinates of the station, methods of observation and instru used are included in the report. *Subject Headings:* **1. Geomagnetic data 2. Observationa 3. International Polar-Year, 1932–1933 4. Swedish Polar Year Expedition, 1932–1933 5. bergen. I. Svenska Nationalkommittén för Geodesi och Geofysik.**—*A.A., M.L.R.*

5I–95 551.508:551.3

Panov, B. P., **Ledovyĭ dinamometr.** [Ice dynamometer.] *Problemy Arktiki*, No. 10/1 **143, 1939.** fig. **DLC**—An ice dynamometer constructed by the author and V. V. KUZNET the Hydrographic Institute of the Glavsevmorput', for use in determining pressure of ice, reg of cause, on any instrument, object or equipment in the ice, with measurements possible fro 70 kg/cm² is described and illustrated. *Subject Headings:* **1. Ice dynamometers 2. Ice p measurement.**—*M.R.*

5I–96 551.

Scherhag, B., **Die Erwärmung des Polargebietes.** [The warming of the polar region. *nalen der Hydrographie und Maritimen Meteorologie*, 67:57–67, **1939.** tables, diagrs. **DLC** of the warmer climate of northern Europe, based on Gulf Stream temperature data, 186 atmospheric circulation, 1936–1938; Nov.–March temperatures in West Spitsbergen, 19 and temperature changes in Norway, etc., 1801–1938. *Subject Heading:* **1. Warming of A** *Arctic Bibliography, No. 15453.*

5I–97 551.556.3:62

Shekhovtsev, N., **Ob ispol'zovanii energii vetra na Kraĭnem Severe.** [Wind energy ut in the far North.] *Sovetskaia Arktika*, Leningrad, No. 10:75–77, **1939.** fig. **DLC**—De and illustrations of wind generator such as is used in Soviet Arctic regions (to save fuel great number of purposes. Installations were made on Dickson Island, at Cape Zhelanii Island and other polar stations, and had been in operation 2–4 years. An estimate is ma amount of energy (in thermal units) obtained in 24 hours from one of the D-12 type wind ge *Subject Headings:* **1. Wind utilization 2. Wind generators.**—*M.R.*

5I–98 551.509:55

Somov, M. M., **K voprosu o sredneĭ tolshchine l'da v okraĭnnykh moriakh.** [On the of mean thickness of ice in border seas.] *Problemy Arktiki*, No. 6:11–20, **1939.** fig., re **DWB**—Author claims mean depth of ice in seas of the Arctic can be calculated from a n which makes use of the total number of degree days below 0°C from the moment of first f of ice and the mean monthly direction and speed of ice. Theory is presented in great detail. *Headings:* **1. Ice thickness 2. Ice forecasting 3. Arctic Seas.**—*M.R.*

5I–99 551.311.184(268)

Somov, M. M., **O postroenii skhemy dreĭfa l'dov v poliarnom basseĭne.** [Construction of a eme of ice drift in the Polar Basin.] *Problemy Arktiki*, No. 5:25–32, **1939.** 8 figs., 13 refs. **WB**—Knowledge of the circulation of ice in the Arctic is based almost entirely on drift of ships ring various expeditions, and to some extent on the mean atmospheric pressure during a given ason, and resulting wind circulation at the earth's surface. A few drift buoys have been used in e Barents and Kara seas. Six schemes by various authors: SANDSTROM, ZUBIV, VIZE and others shown along with charts of mean air pressure at sea level for winter and for summer (1935–37). ain conclusion is that circulation of both atmosphere and ice differs little from summer to winter xcept in the Barents and Kara Seas), and the ice movement is anticyclonic around a pole at 75°–°N and 120°–150°W. In order to forecast ice movements (departures from normal) it is necessary know what the normal really is. The schemes presented here are merely a first approximation. *bject Headings:* **1. Ice drift 2. Arctic ice movement 3. Arctic air circulation 4. Mean pressure arts 5. Arctic.**—*M.R.*

5I–100 551.46

Sysoev, N. N., **Ob izmerenii morskikh techeniĭ v dreĭfe.** [Measurement of ocean currents dur- a drift.] *Problemy Arktiki*, No. 10/11:5–12, **1939.** 5 figs., 5 refs. **DLC**—The general methods measuring the direction and speed of drift (of a vessel or ice floe such as the "Severnyĭ Polius" pedition were located on) are reviewed and the "logs" and their use illustrated. The geometry the calculations as worked out in the Black Sea Expedition of 1935 (following lines used by NAN-N) are illustrated and recommended for Arctic drift calculations. Possible magnitude of error is o considered in the calculations as illustrated. *Subject Headings:* **1. Drift calculations 2. Ocean rrent measurement 3. Papanin Expedition, 1937–1938 4. Arctic.**—*M.R.*

5I–101 551.5:016(98,99)

†U. S. Works Progress Administration, N. Y. City, **Annotated bibliography of the Polar regions. ries B. Selected list of bibliographies on the Polar regions.** New York [**1937, 1939?**] 2 Pts. t. 1, 41 p.; Pt. 2, 27 p.) Sponsored by the Explorers Club of America. James Ferrell, Tech. pervisor. **DLC**—Approximately 675 citations from English, German, French, Danish, Norwegian, edish and North American sources, dealing with geology, petrography, oceanography, expeditions, ra, geography, zoology, biology, travel, meteorology, glaciology, paleontology, and numerous ier subjects. *Subject Headings:* **1. Arctic bibliographies 2. Arctic 3. Antarctica. I. Ferrell, mes.**—*M.L.R.*

5I–102 551.553:551.583(268)

*Vize, V. IU., **O kolebaniiakh vetrovogo rezhima v Arktike.** [The fluctuations of wind regime the Arctic.] *Problemy Arktiki*, No. 4:31–37, **1939.** 4 figs., table, refs. **DWB**—The author esents a number of time-graphs showing the increasing frequency of SW winds and decreasing quency of SE winds during winter at Yugorski Shar, Novaya Zemlya, during period 1913–1938 d the trend in ratio of NE to NW winds at Yugorski Shar during the same period. The process ich has been called "warming of the Arctic" during these 2 decades, is a self-inducing process. e greater frequency of warm SW-NW winds during the 1920–38 period resulted in a decrease in in the Barents and Kara seas, which in turn gave a more northerly track of cyclones moving from e Greenland Sea into the East Siberian Sea region and this produced a higher percentage of SW NW (warm) winds compared with NE or SE winds (cold) which prevail when the cyclones take more southerly track. *Subject Headings:* **1. Warming of Arctic 2. Cyclone tracks 3. Wind gime fluctuations 4. Arctic ice limits 5. Yugorski Shar, Novaya Zemlya.**—*M.R.*

5I–103 551.583:551.553.6:525.6(98)

Vize, V. IU., **Poteplenie Arktiki i prilivo-otlivy.** [Warming of the Arctic and the tides.] *Prob- ny Arktiki*, No. 5:37–42, **1939.** 3 tables, 11 refs. **DWB**—Harmonic analysis of tidal data for udolph Island, Tikhaia (Calm) Bay and Dickson Island for 1900–1922 and 1933–35, shows that ere has been an increase in the amplitude and height of the semidiurnal and diurnal tides during e period 1900–1933 and even 1922–1935 (Dickson Island) during which the "warming of the rctic" took place. Local wind regime effects at places such as Yugorski Shar and Cape Cheliuskin e shown in tables. The greater height of tides in the Soviet Arctic is thought to be due to (a) crease in amount of ice and (b) greater frequency of SW–NW winds compared with NE–SE nds. *Subject Headings:* **1. Arctic tides 2. Warming of Arctic 3. Wind effects on tides 4. Soviet rctic.**—*M.R.*

5I–104 551.311.181

Zubov, N. N., **O normal'noĭ tolshchine morskikh l'dov v raĭone ikh vynosa.** [Normal thickness sea ice in the region of its dispersal.] *Problemy Arktiki*, No. 5:43–45, **1939.** fig. **DWB**—As a

result of ice thickness-measurements at Uedineniya Island (1935–36), at Cape Schmidt in (1936– and other polar stations, a formula: $i^2+50i=8R$, where i is depth of ice in centimeters and R— number of freezing degree days agrees with those formulas based on observations in Franz J Land, Dickson Island (13 year) and Yugorski Shar (8 years). Experiments in a testing ba (canal) show the profile of ice thickness along the canal with a temperature of −25°C, yieldin formula $R=\Theta T$, where Θ is the temperature differences between air and water and T the numbe days and $S=VT$, where S is the distance traveled by the ice in miles, V the speed of drift in kn so that the final formula becomes $i^2+50i=\frac{8\Theta S}{v}$ for the thickness of ice at the place of break

Subject Headings: **1. Ice thickness formulas 2. Arctic ice dispersal 3. Kara Sea.**—*M.R.*

5I–105 551.509:551.311.181(2

*Zubov, N. N., **O pokazatele zamerzaniia moria.** [On an index of the freezing of the s *Problemy Arktiki*, No. 4:5–12, **1939.** 6 tables, 3 figs. **DLC**—Data on temperature, dens salinity and viscosity of sea at different depths are tabulated and shown graphically for the Be and Kara seas. Useful rules for forecasting freezing of the sea from these and other parame (depth, vertical circulation, etc.) are given. *Subject Headings:* **1. Freezing of seas 2. Arctic oc ographic data 3. Arctic sea ice 4. Bering Sea 5. Kara Sea.**—*M.R.*

1940

5I–106 551.311

*Antonov, V. S., **K voprosu o taianii l'dov.** [The problem of ice melting.] *Problemy Ar* No. 11:23–29, **1940.** fig., 3 tables, 2 eqs. **DLC**—Zubov in his theoretical formula and Kar in his empirical formula for rate of melting of ice in the Arctic coastal regions assumed that tha on the under side of the ice was negligible because the water would be close to freezing point. tempting to calculate the melting of ice in Dickson Bay, the author encountered a strong influ of the warm waters from the Yenisei which reach 17°C at the surface in July according to a the time-cross section for 1938. This temperature contrast would melt a lot of ice on the undersi regions where the ice stays the year around. The quantitative data on heat balance, sta with the monthly radiation balance and considering all possible factors, are presented. *Su Headings:* **1. Ice melting 2. Arctic sea ice 3. Yenisei River, U.S.S.R. 4. Dickson Bay, S Arctic.**—*M.R.*

5I–107 551.506.5

Badigin, Konstantin Sergeevich, **Na korable "Georgiĭ Sedov" cherez Ledovityĭ Okean.** the "Georgiĭ Sedov" through the Arctic Ocean.] Moscow, Izdat. Glavsevmorputi, **1940.** 6 figs., illus., maps (fold.). **DLC**—First 545 pages of this book give a popular description of the dr expedition (Oct. 1937–Jan. 1940) with scattered scientific information. The preliminary sci results are summarized by Zubov and Badigin on the last 60 pages, giving hydrographic (depths, temperature sections) as well as meteorological data for temperature, pressure (with of seasonal and annual distribution for 1937–39), precipitation (annual total 74 mm), sever weather, auroras, ice thickness, wind direction and speeds, ice-drift (mean angle of deviation wind direction was 24°) and steady currents. Detailed discussion devoted to the relation be the ice-drift and the mean monthly isobars. (For further information, *see* abstract No. 903, *Bibliography*, 1953.) (*Same item as* 5A–79, Jan. 1954, *MAB.*) *Subject Headings:* **1. "S Drifting Expedition, 1937–1940 2. Arctic expeditions 3. Ice drift 4. Arctic Ocean. I. Z N. N.**—*A.A.*

5I–108 551.5

Baxendell, J., **Recent meteorological dislocations.** *Meteorological Magazine*, London, 75: **1940. DLC**—The warming up of the Arctic since 1922 has a decided influence in moderat changing the climate of subarctic and temperate regions. *Subject Headings:* **1. Warming of 2. Climatic variations 3. Arctic.**—*A.A.*

5I–109 551.506.5(98) 551.594.5

Buinitskiĭ, V. Kh. and Efremov, A. D., **Predvaritel'nye nauchnye itogi dreĭfa ledokola "S** [Preliminary scientific results of the ice breaker "Sedov."] *Akademiia Nauk SSSR, V.* 10(1/2):39–50, **1940.** 2 figs. **DLC**—Brief reports on astronomical, magnetic, auroral, gravita bathymetrical, biological, hydrological and meteorological work of the "Sedov" (1937–3 pedition. It is stated that auroras were observed on all but 5–6 days when the sky was not cast. The types of meteorological observations made during the expedition are listed in Cross sections of water temperature to 2500 m depth are given for E–W ("Sedov") and N– 89°N) for "Sadko," "Fram," "Sedov" and "Severnyĭ Polius" expeditions. *Subject He*

"Sedov" Drifting Expedition, 1937–1940 2. Meteorological observation 3. Auroral observation Ocean temperatures 5. Arctic Basin.—*M.R.*

5I–110 551.521(268)

*Chernigovskiĭ, N. T., **Opyt opredeleniia radiatsionnogo balansa arkticheskikh morei.** [Experiment in determining the radiation balance of Arctic seas.] *Problemy Arktiki*, No. 5:23–34, **1940.** figs., 20 tables, 7 refs. **DLC.** Also: **Opyt opredeleniia radiatsionnogo balansa Karskogo moria.** Experiment in determining the radiation balance of Kara Sea.] *Ibid.*, No. 3:92–97, **1940.** tables. LC—Mean monthly observational data are combined with theoretical formulas to determine the diation balance for the Kara Sea, the Laptev Sea (Cape Cheliuskin and Tiksi Bay); the Chuckchee a (Cape Schmidt and Cape Dezhnev) and the East Siberian Sea ("Maud" Expedition and data om Chetyrekhstolbov Islands). The balance is determined from data on incoming radiation, bedo (reflected radiation), outgoing (long) radiation and absorbed radiation (by water, snow, aporation, etc.). The data which are used are presented in tables and graphs for each element r each station. The annual march of resulting radiation balance is also shown. *Subject Headings:* **Radiation balance 2. Albedo 3. Arctic seas.**—*M.R.*

5I–111 551.46 551.506.5(268)

Efremov, A., **Hydrological and meteorological research work on board of the ice-breaker Sedov."** *Akademiia Nauk SSSR, Comptes Rendus (Doklady), New Series*, 27(2):128–132, **1940.** LC. Also: **Gidrologicheskie nabliudeniia na ledokole "Sedov" v 1938–1940.** Hydrologic observations on the drifting ice breaker "Sedov," 1938–1940.] *Sovetskaia Arktika*, 45–52, **1940. DLC**—Hydrological observations were made at standard levels from 0 m to a pth of 2000 m. One graph shows the hydrological cross section of the Arctic Ocean (taken almost ong the line of the meridian 90°) consisting of temperature readings taken at the following stations: the "Severnyĭ Polius" in 1937, on the "Sedov" in 1939, on the "Fram" in 1894 and on the adko" in 1935. Observations of usual meteorological elements (every 2 hours except for precipitation) were made. These were used to make comparisons with observations made on the ram" 44 years earlier. No data included. *Subject Headings:* **1. Radiation balance 2. Albedo Arctic seas.**—*M.L.R.*

5I–112 551.5:91.04(268)

Ellsberg, Edward, **The drift of the "Jeanette" in the Arctic Sea.** *American Philosophical ciety, Proceedings*, 82(5):889–896, June **1940. DLC**—Expedition headed by GEORGE WASHINGTON E LONG sailed from San Francisco on July 8, 1879, passed through Bering Strait in Sept. and by pt. 6 was solidly frozen in ice pack. The Jeanette's drift in the ice pack was unprecedented. In ite of difficulties, careful scientific observations of salinity, temperature, density of the ocean from p to bottom; thickness and characteristics of ice pack; magnetic phenomena; wind velocities, r temperature, humidity and other meteorological elements and special studies of snow crystals der low temperature conditions were made. *Subject Headings:* **1. Arctic expeditions 2. "Jeanette" Expedition, 1879–1881 3. Bering Strait 4. Arctic Ocean.**—*M.L.R.*

5I–113 551.521.1(98)

*Kalitin, N. N., **Solntse Arktiki. Die Sonne in der Arktis.** [The Arctic sun.] *Priroda*, (8):21–27, **1940.** 5 figs., 6 tables, 7 refs. In Russian and German. **DLC**—After a general scussion (with tables) of length of day in Arctic, the author gives results of measurements of solar diation intensity at Tikhaia (Calm) Bay in Franz Josef Land (farthest north radiation station in e world, 80.3°N), Barentsburg, Spitsbergen; Matochkin Shar, Novaya Zemlya; Selo Poliarnoe, ola Peninsula and Uelen in the Chuckchee Peninsula, and compares them with similar data for shkent (41°N) and Slutsk (60°N). Curves show diurnal variation in direct solar radiation on rizontal and on vertical surface at Tikhaia, Slutsk and Ashkhabad at the summer solstice, and for kutsk and Karadag as well, by seasons and for years. *Subject Headings:* **1. Solar radiation data Latitude effects 3. Arctic Regions 4. Soviet Arctic.**—*M.R.*

5I–114 551.521.1(98,268)

*Kalitin, N. N., **Summarnaia radiatsiia v Arktike.** [Total radiation in the Arctic.] *Problemy rktiki*, No. 1:36–43, **1940.** 5 figs., 5 tables, refs. **DLC**—Actinometric data for 6 stations in the viet Arctic (and for the "Maud" Expedition and Sodankylä, Finland) for period 1923–1938, are mmarized in a table and in graphs, and compared with data from stations in lower latitudes (in e U.S.S.R. and for Nice and Paris, France and 6 stations in the U. S., 2 in Italy and one in Mexico). he dependence on latitude of total annual and seasonal radiation on a horizontal and a vertical rface is shown in graphs and tables and is discussed. *Subject Headings:* **1. Arctic solar radiation Solar radiation variations 3. Solar radiation data 4. Latitude effects 5. Arctic Regions.**—*M.R.*

5I–115 551.524:551.311.181(2

*Karelin, D. B., **Taianie l'da v Arktike pod vliianiem temperatury vozdukha.** [Ice melting the Arctic under the influence of air temperature.] *Meteorologiia i Gidrologiia*, No. 4:71–75, 19 3 figs., 3 tables, 8 eqs. **DLC.** Also his: **Taianie l'da v Arktiki.** [Ice melting in the Arctic.] *P lemy Arktiki*, No. 5, 118–119, **1940.** 4 eqs. **DLC**—In the eastern sector of the Soviet Arctic sea ice (near the coast) reaches its maximum thickness in the middle of May and begins thaw about June 1. Not much melting occurs at the surface unless the air temperature averages hig than −5°C. Data on thickness of ice in the early summer of 1936, 1937 and 1938 at the end of e decade are correlated with sum of temperatures above −5°C for the respective periods and a strai line relationship was found, with the corresponding equation:

$$\Delta H = 0.56\,[(T° + 5)\eta - 36]$$

where $(T° + 5)\eta$ is ΣT temperature above −5°C. For other regions the beginning date and h might differ was well as the slope, so for the entire area of the eastern Arctic the equation $\Delta H = 0$ $(T° + 1.2)\eta$ if found to agree very well with empirical data on ice melting. The data obtained in vernaya Zemlya in 1931 and 1932, and on the "Severnyĭ Polius" drifting station in 1937 were tested. *Subject Headings:* **1. Ice melting 2. Temperature effects 3. Arctic Basin.**—*M.R.*

5I–116 551.311.184(

Laktionov, A. F., **Dreĭf l./p. "Sedov" v tsentral'nom poliarnom basseĭne.** [Drift of the breaker "Sedov" in the central Polar Basin.] *Priroda*, 29(2):12–17, **1940.** chart, photo, 2 tal refs. **DLC**—Account, with detailed chart showing course from month to month, of drifting breaker "Sedov," Sept. 23, 1937–Jan. 16, 1940, compared with similar drift (though 3°–4° far south) of NANSEN's "Fram" (1893–36) and the drift of the "Severnyĭ Polius" (in 1937–38) North Pole to E. Greenland. Farthest north of "Sedov" drift was 86°40′N at 47°55′E on 31 1939. Oceanographic and meteorological observations gave information on conditions in an alt unknown area and show changes in temperature since the "Fram" (in almost the same area) to warming of Arctic. *Subject Headings:* **1. Arctic drift expeditions 2. "Sedov" Drifting Exp tion, 1937–1940 3. Arctic Basin.**—*M.R.*

5I–117 551.311.184:551.465

*Petrichenko, A. N., **Predvaritel'nye dannye dreĭfa "Sedova" v 1937 i 1938 godakh. (A pokazateleĭ dreĭfa i techeniĭ.)** [Preliminary data on the drift of the "Sedov" in 1937 and (Analysis of drift and current records.)] *Problemy Arktiki*, 29(2):69–85, **1940.** 8 figs., 19 ta Also: SHokal'skiĭ, IU. M., **"Sedov," ego dreĭf i geografiia Severnogo poliarnogo basseĭna.** "Sedov," its drift and the geography of the Polar Basin.] *Ibid.*, p. 34–38. **DLC**—SVERD method was used to calculate the drift of the ice in the neighborhood of the "Sedov" (which para the "Maud" for all practical purposes). The wind observations for each month (Dec. 1937 1938) are worked up in detail and plotted on a "Sverdrup diagram" and similar treatment giv data for March–Aug. and Aug.–Dec. 1938. Average direction and drift speed is worked ou various periods and compared with "constant current" calculations. Conclusion is that north the drift is less important than indicated by the Sverdrup method, but up to 82° (on the N. Sib Shelf) SVERDRUP's method gives a good approximation of actual conditions. An approx constant drift from SE to NW prevails from 78°30′–84°31′N in this regions. In the artic SHOKAL'SKIĬ, the types of observations made on the "Sedov" are described along with descri of expedition of "Sedov" (1938–40). *Subject Headings:* **1. Ice drift 2. "Sedov" data 3. Drifting Expedition, 1937–40 4. Arctic Basin. I. Sverdrup, H. U. II. Shokal'skiĭ, IU. M.**—

5I–118 551.521

*Shpakovskaia, R. N., **Vychislenie priblizhennykh velichin summarnoĭ radiatsii dlia A** [Calculation of the approximate total radiation for the Arctic.] *Problemy Arktiki*, No. 11: **1940.** 4 figs., 5 tables, 5 refs., 2 eqs. **DLC**—The data from 5 Arctic actinometric stations: T (Calm) Bay (1934/5), Uedineniya Island (1938), Cape Zhelaniia (1937), Tiksi Bay (1935–7 Cape Schmidt (1938) are analyzed to obtain, by the Savinov method, a coefficient K for each m which are used to calculate the total monthly and annual radiation in gm cal for a number of Arctic stations not having actinometric data (Barentsburg, Russkaia Gavan, Dickson Island Vykhodnoĭ, Cape Shalaurov and Wrangel Island). A scatter diagram and curve shows the latitu variation (55–85°N) in total radiation. The monthly variation in the relation between the p and actual total radiation and the reflected radiation are shown for each of the 5 stations by of 3 curves (for each). *Subject Headings:* **1. Radiation in Arctic 2. Radiation data 3. Soviet** —*M.R.*

5I–119 551.52

Siniavskiĭ, D. E., **Izuchenie vechnoĭ merzloty.** [Permafrost investigation.] *Sovetskaia* Moscow, No. 11:138–141, **1940.** fig. **DLC**—The Permafrost Institute of the Akademiia

SR, made studies of boundaries of permafrost in European and Asiatic U.S.S.R.; retreat of uthern boundary up to 1940, building construction problems, conservation of permafrost by ificial refrigerants (to protect ground from thawing or absorbing heat), lag in freezing at different pth (useful for underground storage of perishables since at 6 m depth the lag is 6 months, making mmer the coldest time of year), farming in permafrost areas, and origin of permafrost. *Subject adings:* **1. Permafrost research 2. Permafrost boundaries 3. Arctic.**—*M.R.*

5I–120 551.5:016:06

†Spisok izdaniĭ Arkticheskogo nauchnogo instituta 1920–1939. [List of publications of the ctic Institute for 1920–1939.] *Problemy Arktiki*, No. 3:157–184, **1940. DLC**—Nearly 300 blications are listed by series, number, author and title, with contents of those which contain veral articles. Dates of publications range from 1920–1939. The list includes 49 issues of the udy Severnoĭ nauchno-promyslovoĭ expeditsii; 140 volumes of the Trudy of the Arctic stitute; 20 publications of the Materialy po izucheniiu arktiki; "Arctica" (5 Vols.); Problemy ktiki (19 numbers) and Bulletin of the Arctic Institute (55 issues). The author index lists ap-oximately 400 authors, including such writers as V. IU. Vize who contributed 19 articles. *Subject adings:* **1. Arctic bibliographies 2. Periodicals 3. Publication lists. I. Leningrad. Arkticheskiĭ auchno-Issledovatel'skiĭ Institut.**—*M.R.*

5I–121 551.525.5:6(02)(47)

***Sumgin, Mikhail Ivanovich; Kachurin, S. P. et al., Obshchee merzlotovedenie.** [General urse in permafrost science.] Moscow, Akademiia Nauk, **1940.** 339 p. 110 figs., 60 tables, 252 's. (at end of chapters), numerous eqs. **DLC.** Also: Sumgin, M. I. and Demchinskiĭ, B., **Oblast' chnoĭ merzloty.** [The region of permafrost.] Leningrad, Izdatel'stvo Glavsevmorputi, **1940.** 7 p. 64 figs., tables, 61 refs. **DLC**—A technical work for university students covering all phases permafrost investigations: mechanical and physical processes of freezing and thawing, climato-ical and seasonal aspects, variations in soil temperatures (including considerable data for the viet Arctic), secular changes in boundary of permafrost area (in Asia and America) and applications agriculture, engineering and other economic activities. In addition to a great deal of tabular ta, there are many graphs showing variations in time and space in soil temperature or permafrost, d many interesting illustrative photographs of equipment on research work. History, develop-ent and methods of investigation are also treated. (*Same item as* 10–103, Oct. 1950, *MAB.*) ne second work (*same item as* 10–102, Oct. 1950, *MAB*) is a nontechnical treatment of the geo-aphical aspects of frozen soil. *Subject Headings:* **1. Permafrost 2. Soil temperatures 3. Arctic riculture 4. Textbooks.**—*M.R.*

5I–122 551.5:06

XX let Arkticheskogo instituta. [20 years of the Arctic Institute.] *Problemy Arktiki*, No. 5–22, **1940. DLC**—A long account of geophysical and geological work of the Arctic Institute since e Revolution. The meteorological (aerological and synoptic) research and investigations are mmarized in some detail. Hydrological work included long range forecasting of ice conditions in ctic. Expeditions conducted under Arctic Institute sponsorship made detailed meteorological servations and these were summarized and published by the Institute. Joint work since 1938 :h Glavsevmorput' is outlined. *Subject Headings:* **1. Arctic research 2. Arctic meteorological search. I. Leningrad. Arkticheskii Nauchno-Issledovatel'skiĭ Institut.**—*M.R.*

5I–123 551.582(268) 551.575

***Vize, Vladimir IUl'evich, K klimatologii arkticheskikh moreĭ.** [The climatology of Arctic s.] *Problemy Arktiki*, No. 3:45–54, **1940.** 6 figs., 6 tables, 16 refs. **DLC**—The author em-asized the unusual phenomenon of decreasing oceanity of climate in the central part of the Arctic ean illustrating it by the annual range of temperature observed by 7 Russian Arctic stations. ich attention is paid to the daily variations of fog frequency and probability. The zone of ximum oceanity of climate in the polar basin is pointed out. The annual range of temperature d the mean and extreme values for July are given in tables. Thorough research of fog conditions, ly and annual variation of fog frequency supported by data of relative humidity completes the per. *Subject Headings:* **1. Fog 2. Climate of Arctic seas 3. Arctic Seas.**—*N.A.S.*

5I–124 551.509:551.311.181(268)

Volkov, N. A., O priblizhenii ledovykh prognozov k trebovaniiam praktiki. [Improvement of forecasts for practical purposes.] *Problemy Arktiki*, No. 1:29–35, **1940. DLC**—Some differences elements forecast are allowed for different areas owing to the greater or lesser predominance pack ice or shore ice on the one hand, and open water on the other. In long range planning for nsport operations in the seas of the Soviet Arctic and the Greenland Sea, the general aims and thods of making and issuing practical ice forecasts for 21 sea routes or areas are outlined. The

Dec. forecasts are based on reports from the previous season, and other more recent data, and co the opening of the sea routes or breakup of ice in spring. The Aug. forecasts cover the closing navigation in the fall (first signs of freezing, beginning of real freeze up, and date of closing of navi tion). *Subject Headings:* **1. Ice forecasting 2. Long range ice forecasting 3. Arctic.**—*M.R.*

5I–125 551.311.184:91.04(2

Zubov, Nikolaĭ Nikolaevich, **Dreĭf "Sedova."** [The drift of the "Sedov."] *Sovetskaia Arkti* No. 2:56–67, **1940.** 5 charts. Also similar article in: *Severnyĭ Morskoĭ Puť*, No. 14:5–17, 19 **DLC**—The scientific results of the "Fram" Expedition under NANSEN (1893–96) are reviewed a compared with the similar expedition of the "Sedov" (1937–1940) and the "Severnyĭ Polius" (19 38) drifting expedition. All three expeditions came within 4° of the North Pole. In 1917 th were only five meteorological stations in the Russian Arctic; in 1937 there were 55. In 1932 the f ice breaker made passage from Archangel to Vladivostok. Other expeditions in the vicinity of New Siberian Islands are shown on a chart and described ("Sedov," 1938; "Ermak" and "Stali 1938; "Taimyr" and "Vaigach," 1913–14; "Sadko," 1937; "Maud," 1921). The mean isob over the Arctic Ocean and corresponding actual currents for Jan. 1939 (as taken from several expe tion results) are shown on a chart. Actual drift of the "Sedov" and "Severnyĭ Polius" compared w drift calculated from "constant current" assumption, also shown on chart. *Subject Headi* **1. Arctic expeditions 2. Arctic ocean currents 3. Ice drift 4. Arctic pressure patterns 5. Ar Basin.**—*M.R.*

5I–126 551.509:551.311

Zubov, N. N., **O skorosti taianaiia l'dov.** [On the speed of ice melting.] *Problemy Arkt* No. 5:13–18, **1940.** 3 tables, 5 eqs. **DWB**—Formula and tables developed on basis of theory observation for predicting the rate of decrease in thickness of Arctic sea ice, presented for us short-range forecasters. The formula is based on rate of absorption of heat from (1) water b the ice and (2) air above the ice. The former is calculated from theoretical absorption of hea ice from water of a given temperature; the latter from known rate of decrease of ice per day ov period of about 100 days (May 21–Sept. 1). The two formulas are combined into one. *Su Headings:* **1. Ice forecasting 2. Ice melting 3. Arctic.**—*M.R.*

1942

5I–127 551.521.14

Defant, Albert, **Der Einfluss des Reflexionsvermögens von Wasser und Eis auf den Wärme satz der Polargebiete.** [Influence of the albedo of water and ice on the heat balance of the regions.] *Deutsches Wissenschaftliches Institut, Copenhagen, Veröffentlichungen, Ser. I, A* No. 5, **1942.** 7 p. 5 refs., 4 figs., 2 tables. **DLC**—Assuming that the earth is completely co by an ocean, the loss by reflection of the midday direct solar radiation is 21½%. The reflectio is especially great in the Polar regions starting with 60° latitude. Waves increase the refle even more. Further reflection losses are connected with the diurnal variation of the solar h Combined with the reflection from ice surfaces these losses amount to a considerable proportion total heat balance in polar regions. *Subject Headings:* **1. Albedo of water 2. Albedo of ice 3. balance 4. Arctic solar radiation 5. Polar Regions.**—*A.A.*

5I–128 551.583

Weickmann, Ludwig, **Die Erwärmung der Arktis. Mit einem Beitrag von I. P. Jacobse Diskussion der Arktis zugeführten Wärmemenge.** [The warming up of the Arctic. W contribution by J. P. Jacobsen discussing the heat transferred to the Arctic.] *Deutsches W schaftliches Institut, Copenhagen, Veröffentlichungen, Ser. 1, Arktis,* No. 1, **1942.** 22 p. 10 13 refs. **DLC**—Shows remarkable increase of winter temperatures in Spitsbergen up to superimposed by variations, which suggest some relation to sunspots. Accordingly the ice tions improved and the navigation period lengthened. A close relation exists between th perature at Jacobshavn and the pressure gradient between this place and Iceland. Some eff pressure distribution over the Northern Hemisphere are discussed, and precipitation anomal shown for the whole world and Norway separately. The warming of the Arctic led to changes 14 month Chandler period in the pole movements. JACOBSEN discusses the Atlantic water t over the Faröes-Shetland ridge. *Subject Headings:* **1. Climatic variations 2. Warming of 3. Oceanic circulation 4. Spitsbergen 5. Jacobshavn, Greenland 6. Norway. I. Jacobse** —*A.A.*

5I–129 551.526.6(268)

***Wüst, Georg, Die morphologischen und ozeanographischen Verhältnisse des Nordpolarb** [The morphological and oceanographical conditions of the North Polar Basin.] *Deutsches*

chaftliches Institut, Copenhagen, Veröffentlichungen, Ser. I, Arktis, No. 6, **1942.** 21 p. 7 figs., old. maps, 5 tables, 26 refs. **DLC**—Summarizes knowledge gained mainly during the "Fram," Sedov" and "Severnyĭ Polius" drifting expeditions. Besides the morphological conditions (map), ata are given in numerical and graphical form for the vertical temperature distribution along certain rofiles and a circulation scheme for the 0° meridian from 70°N to the North Pole. *Subject Headings:* **. Oceanic circulation 2. Sea temperatures 3. Arctic Basin.**—*A.A.*

1943

5I–130 551.582(98) 91.04

Breitfuss, Leonid L., **Das Nordpolargebiet, seine Natur, Bedeutung und Erforschung.** [The North Polar region, its nature, meaning and exploration.] Berlin, Springer-Verlag, **1943.** 180 p. 9 figs., 2 maps (1 fold.). *Verständliche Wissenschaft*, Bd. 48. **DLC**—A concise geography of the Arctic regions with information on the geography and the climate, including data, the flora and auna and a rather detailed summary of expeditions. One map shows limits of permafrost, isobaths, neteorological stations, etc. An extensive index of subjects and names is added. *Subject Headings:* **. Climate of the Arctic 2. Arctic expeditions 3. Arctic Regions.**—*A.A.*

5I–131 551.521.1(268)

Court, Arnold, **Insolation in the polar atmosphere.** *Franklin Institute, Journal*, 235(2):169–178, Feb. **1943.** 3 figs. (1 fold.), 9 refs. **DLC**—Mathematical and astronomical determinations of the distribution of solar radiation in the free atmosphere of the polar regions. *Subject Headings:* **. Solar radiation distribution 2. Polar Regions.**—*Arctic Bibliography, No. 3438.*

5I–132 551.583(268,98)

Dzerdzeevskiĭ, B. L., **K voprosu o poteplenii Arktiki.** [On the warming of the Arctic.] *Akademiia Nauk SSSR, Izvestiia, Seriia Geograficheskaia i Geofizicheskaia*, 2:60–69, **1943.** English summary p. 68–69. 4 figs. 13 refs., 4 tables. **DLC**—Meteorological and ice observations made during the drifts of the "Fram" the "Severnyĭ Polius" station and the "Sedov" are compared. The summer temperature (1.2°C) did not change, but the winter temperature increased up to 9.4°C in Dec. A similar warming is shown also for three continental Arctic stations. Changes in barometric pressure and its variability are inconclusive. Drift data are summarized and a schematic map of the ice-drift in the Arctic Ocean is given. *Subject Headings:* **1. Climatic changes 2. Warming of Arctic 3. Ice drift 4. Arctic Basin.**—*A.A.*

5I–133 551.586:59(98)

Steinböck, O., **Eigenheiten arktisch-alpiner Tierverbreitung.** [Peculiarities in arctic-alpine distribution of animals.] *Deutsches Wissenschaftliches Institut, Copenhagen, Veröffentlichungen, Ser. I, Arktis*, No. 12, **1943.** 10 figs. 11 p. 12 refs. **DLC**—An ecological study discussing the climatic and historical causes of the distribution of some animals. The distribution of *Turdus iliacus L.* (thrush) over Scandinavia shows a well pronounced relation to the distribution of annual precipitation. *Subject Headings:* **1. Animal distribution 2. Arctic.**—*A.A.*

1944

5I–134 551.5:91.04(05)

†**Problemy Arktiki,** Leningrad, No. 1, 1937; latest recd. No. 2, **1944.** Renumbers each year. Pub. by Leningrad. Arkticheskiĭ Nauchno-Issledovatel'skiĭ Institut. Bimonthly, 1937–1938; monthly, 1939–. Summaries in English. Two publications—*Leningrad. Vsesoiuznyĭ Arkticheskiĭ Institut, Biulleten*, and *Arktika* (organ of the same Institute) combined in 1937 to form *Problemy Arktiki*. **DLC** (1937–1940), **DGS** (1944)—Each number contains papers on scientific subjects (popular presentations of field work, also some theoretical papers and results of research and field investigations), accounts of life and research programs in the Soviet Arctic and foreign expeditions or research work, news, notes and a bibliography, arranged by subject, which is international in scope. *Subject Headings:* **1. Periodicals 2. Arctic bibliographies 3. Arctic expeditions. I. Leningrad. Arkticheskiĭ Nauchno-Issledovatel'skiĭ Institut.**—*Arctic Bibliography, No. 13966.*

5I–135 551.582(98)(02)

Stefansson, Vilhjalmur, **Arctic manual.** New York, Macmillan, **1944.** 556 p. 26 photos. **DWB**—Deals mainly with survival under Arctic conditions, pictured very favorably by the author ("Living off the country"). A more general discussion informs the reader of the physical geography, climate and weather (physical effects of cold, special aviation problems, winds and gales, precipitation, fog, atmospheric pressure and ice conditions with short ice glossary). Other chapters discuss light conditions, vegetation, shelters, water sources, clothing, health, travel, hunting and mechanized transport. A detailed subject index is provided. Very little data, no formulas and no theories are

presented in order to make the books readable "without mental distress." *Subject Headin* **1. Arctic survival 2. Climate of the Arctic 3. Manuals 4. Arctic Regions.**—*A.A.*

5I–136 551.54:551.590.22(9

Vize, V. IU., **Parallakticheskie atmosfernye prilivy v Arktike.** [Parallactic atmospheric ti in the Arctic.] *Problemy Arktiki*, No. 1:33–55, **1944.** 13 figs., 12 tables, 5 refs. **DGS**—A stu of the relation between lunar months and atmospheric tides in the Arctic region, based on obser tions of baric waves in Tiksi Bay and on Wrangel Island. (*Same item as* 2.11–108, Nov. 19 *MAB.*) *Subject Headings:* **1. Pressure waves 2. Atmospheric tides 3. Lunar influences 4. Wra gel Island 5. Arctic.**—*C.K.*

1945

5I–137 551.582(268):551.50

§†*Ekspeditsiia SSSR na Severnyĭ Polius, 1937, **Trudy dreĭfuiushcheĭ stantsii "Severnyĭ Poliu Nauchnye otchety i rezul'taty nabliudeniĭ dreĭfuiushcheĭ Ekspeditsii Glavsevmorputi 1937–1938** [Transactions of the drifting station "Severnyĭ Polius." Scientific account and results of obser tions on the drifting expedition of the Glavsevmorput' in 1937–1938.] 2 v. Leningrad, Izd Glavsevmorputi, **1940–1945.** Review of v. 1 by: Severnyĭ, A. B. and Mustel', E. R. in *Akadem Nauk SSSR, Izvestiia, Seriia Geograficheskaia i Geofizicheskaia*, No. 2:209–214, **1941. DLC.** stracts in English of the most important information given in Vol. 1, Pts. 1–5, and in Vol. 2, 1–2, issued at California. University at L.A., Dept. of Meteorology, Contract AF 19(122)-2 Scientific Report, No. 5, June 1954. Complete translation, by Curtis D. Benster, of Vol. 2, Pt by Dzerdzeevskii, B. L., **Circulation of the atmosphere in the central Polar basin,** issued as (U.C.L.A.) *Scientific Report*, No. 6, June **1954. DWB**—Vol. I contains a descriptive account of pedition, map of route and a complete list of coordinates of drift. Vol. II, Pts. 1–3 (by FEDO and DZERDZEEVSKII) contains meteorological apparatus and observations, p. 5–30; meteorolog service of the expedition, p. 31–63; atmospheric circulation in the central polar basin, p. 64–1 tables of hourly or synoptic observations and various types of summaries, p. 187–397; cloud ph graphs, p. 401–423; and 58 synoptic charts on color backgrounds, p. 427–484 (for fuller abst *see item* 1–127, Jan. 1950, *MAB.*) *Subject Headings:* **1. Arctic exploration 2. Papanin Expediti 1937–1938 3. Translations 4. Arctic Basin. I. Severnyĭ, A. B. II. Mustel', E. R. III. Fedo E. K.** (*ed.*). **IV. Dzerdzeevskii, B. L.**—*M.P.K.*

5I–138 551.583:551.524.33(98) 551.50

*Groissmayr, Fritz Béla, **Weltwetter und Klimaschwankung im Nordpolargebiet.** [W weather and climate oscillation in the North Polar area.] *Polarforschung*, Kiel, 15(1/2):5–9, 1 6 tables, 3 refs. **DWB**—The long period temperature records for Greenland, Iceland, Ala Canada, Europe, and northwest Siberia are analyzed and correlated to determine the reality nature of climatic changes or variations in the Polar region during the last few decades (1876–19 The analysis indicates that (1) there has been an increase in winter temperature on the west c of Greenland; (2) there is evidence of a 24-year period in temperature fluctuation; (3) abno warmth in one part of the Arctic is accompanied by abnormal cold in another and (4) a se winter may be expected in western Europe if there are abnormally low temperatures during S and Oct. in northwest Siberia. Further study necessary to completely verify author's conclusi (*Same item as* 10–158, Oct. 1950, *MAB.*) *Subject Headings:* **1. Climatic variations 2. Long ra forecasting 3. Temperature periodicities 4. Arctic Regions.**—*M.R.*

5I–139 551.582(98

†Lappo, S. D., **Spravochnaia knizhka poliarnika.** [The polar worker's reference book.] cow, Izdat. Glavsevmorputi, **1945.** 423 p. **DLC.** Review by: Armstrong, T. E., **Handbook Soviet polar workers.** *Polar Record*, 5(33/34):92–93, Jan.–July **1947. DLC**—Non-alphabe glossary of scientific and local terms pertaining to the Arctic. First half of the book is a revisi the author's **Okeanograficheskiĭ Spravochnik Arkticheskikh Moreĭ SSSR** [Oceanographical h book of the Arctic Seas of the U.S.S.R.] published in 1940. Among the new material is a sectic climate. There is a fairly full bibliography. Reviewer compares this work with STEFANS **Arctic Manual** (*see item* 5I–135). STEFANSSON writes primarily for people who have never been i Arctic while LEPPO presupposes that his readers are already acquainted with that area. *Headings:* **1. Climate of the Arctic 2. Arctic oceanography 3. Manuals. I. Armstrong, T.** *From the review.*

5I–140 551.31

†*Zubov, N. N., **L'dy Arktiki.** [Arctic ice.] Moscow, Izdat. Glavsevmorputi, **1945.** 3 195 figs., 121 tables, 179 refs. **DPL, DLC.** Trans. as: **Arctic ice. Abstracted from Russian or by Eugene A. Golomshtok, and prepared by Stefansson Library.** Wilmette, Illinois, Cor Engineers, U. S. Army, Snow, Ice & Permafrost Research Establishment [**1953?**]. **DWB.** review by Shumkin, D. B., in *Arctic*, 2:65–69, **1949. DLC**—A comprehensive treatise on the ph

d chemical properties of sea water, the processes changing the temperature and salinity of the ean, the processes forming water masses, the interaction between the ocean and atmosphere and e formation, properties and behavior of the ice of the Arctic Ocean. The individual chapters are follows: 1) Some characteristics of sea water; 2) Change of temperature and salinity of the ocean; Mixing of waters of the oceans; 4) Ice formation and ice characteristics in the sea; 5) Physical d chemical characteristics of sea ice; 6) Growth of ice; 7) Deformation of ice; 8) Melting of sea ice; Ebb and flow phenomena and ice; 10) Lee currents and ice; 11) Wind and ice drift; 12) Circulation waters and ice of the Arctic Ocean and 13) Seasonal and secular variations of ice distribution. ie treatment is theoretical, mathematical and descriptive. There are numerous equations, ıgrams, statistical data and illustrations. The translation comprises the textual portion of the ginal without the figures, tables or extensive bibliography. (*Same item as* 5A–38, Jan. 1954, *AB.*) *Subject Headings:* **1. Arctic sea ice 2. Energy exchange sea-atmosphere 3. Translations Arctic. I. Golomshtok, Eugene A. II. Shumkin, D. B.**—*I.L.D.*

1946

5I–141 551.525.5:001

†Bryan, Kirk, **Cryopedology. The study of frozen ground and intensive frost-action with ggestions on nomenclature.** *American Journal of Science*, 244(9):622–642, Sept. **1946.** 4 figs., refs. **DLC**—Cryopedology is suggested as a term for the study of intensive frost action and rmanently frozen ground, including studies of the processes and their occurrence and also engineer- g devices which may be invented to avoid or overcome difficulties caused by them. Lists and fines a number of terms (some new, others modifications of older ones) to be used in discussion of ost action, particularly in the Arctic. Points out that present interest in Arctic has created new oblems for American engineers and construction workers leading to the study of intensive frost tion and permanently frozen ground. *Subject Headings:* **1. Permafrost terminology 2. Engineer- g meteorology.**—*M.L.R.*

5I–142 551.583.14(985)

Pokrovskaia, Taisiia Vasil'evna, **Poteplenie klimata na severe Tikhogo Okeana.** [The warming the climate in the North Pacific Ocean.] *Meteorologiia i Gidrologiia*, No. 5:88–95, **1946.** 4 figs., s. **DWB**—Time graphs show the rise of temperatures at Nikol'skoe on Bering Island from 1911 1936. A chart of the Polar Basin shows a scheme of circulation of the surface waters and ice, ken from *Problemy Arkitiki*, No. 5, 1939. Scatter diagrams show the dependence of mean air nperature for two years (March–October) at Bering Island on precipitation for 2 winter seasons the Caspian Basin. *Subject Headings:* **1. Warming of Arctic 2. Climatic variations 3. Bering and.**—*N.A.S.*

5I–143 551.582(268.5)

*Prik, Z. M., **Klimaticheskiĭ ocherk Karskogo moria.** [Climatic outline of the Kara Sea.] *ningrad. Arkticheskiĭ Nauchno-Issledovatel'skiĭ Institut, Trudy*, v. 187, **1946.** 442 p. 10 figs., tables, 58 maps, bibliog. p. 278, appendices p. 339–440. **DLC** (Slavic R.R.)—This is not an tline but a very complete collection of climatic data, the last one in a series of 4 monographs on the matic conditions of the Northern Sea route. Besides those from coastal stations, 21,000 observa- ns on the sea, taken mainly during the summer, are utilized. The averages are reduced to the riod 1930–39 as far as possible. Pt. 1 gives a descriptive discussion of climatic features and planations for the tables in Pt. II, which present monthly averages for pressure and its variability, luding average interdiurnal variability and its frequency distribution and frequency of cyclones d wind directions, wind speed, mean wind vectors, wind directions in the atmosphere up to 2000 m, quency of calms, frequency of strong winds and maximum wind speeds. Temperature conditions characterized by monthly averages and their variability, interdiurnal variability, dates when tain temperatures are reached, frequency distribution of daily means, frost and thaw days, erage diurnal variation, maximum and minimum temperatures, frequency distribution of the verity of weather, thermal wind roses and temperature in the free atmosphere. Average monthly solute and relative humidity are given, as well as cloudiness, clear and overcast days, monthly cipitation and maximum for one day, number of days with rain or snow and the probability of cipitation, occurrence of rime and glaze, height of snow cover and frequency of snow storms, nderstorms, fog and its duration in relation to temperature or wind direction and speeds, visibility, l temperature and auroras. A large part of the climatic information is presented also on maps. e last part gives monthly means of the climatic elements for each year under observation. A list stations with coordinates and length of the period of record and information on ship observations given on p. 71–73, a map of the stations on p. 281. Comparing (on p. 53–55) the precipitation ta with the water content of snow, it was found that on the average the measured precipitation 3–4 times less than the accumulated water content, in one case even over 8 times less. *Subject adings:* **1. Climatic data 2. Climatic charts 3. Precipitation measurement 4. Climate of the ra Sea 5. Kara Sea.**—*A.A.*

5I–144 551.582.3(01):551.311.181:

†*U. S. Hydrographic Office, **Ice atlas of the Northern Hemisphere.** Wash., D. C. **1946.** 10 charts, tables, 1700 refs. "Index chart on front lining paper." Its *H.O. Pub.*, 550. **DLC, DV** Also: **Bibliography of ice of the Northern Hemisphere.** Wash., D. C., **1945.** 179 p. 1700 r Its *H.O. Pub.*, 240. **DLC**—The main emphasis of this series of ice maps is directed to navigat conditions rather than of the genesis of the ice itself. Northern Hemisphere maps show the aver and extreme distribution of ice for each month in the oceans and the opening and closing date river ice as well as the number of days with ice in rivers. More detailed monthly maps with available data are given separately for the Grand Banks region (including isopleths for iceber Baltic Sea, Black Sea, White Sea and Okhotsk Sea. A list of 1700 references to pertinent literat is included. (*Same item as* 5A–111, Jan. 1954, *MAB.*) The bibliography compiled by Miss M C. Grier is one of the principal sources for ice, its properties and geographical distribution, on b the continental and oceanic waters of the Northern Hemisphere. The bibliography is arranged geographic divisions starting with world wide studies and the whole Arctic Ocean and a sepa chapter for general properties and problems of ice. The references have, in many cases, sh annotations. An author and subject index, an index of geographic names with coordinates and a of periodicals with abbreviations are included. *Subject Headings:* **1. Ice atlases 2. Ice bibliograp 3. Ice distribution 4. Arctic Ocean 5. Northern Hemisphere. I. Grier, Mary Catherine** (*com —A.A.*

5I–145 551.542

U. S. Weather Bureau, **Normal weather maps. Northern Hemisphere, sea level press** [Wash., D. C.] **1946.** [1 p.]+13 charts. **DLC**—Maps present monthly and annual mean level pressure distribution for the 40½ year period (1899–1939) covered by the Daily synoptic se Historical weather maps, Northern Hemisphere, Sea Level, Jan. 1899–June 1939. **DLC**—I pressure data were obtained by interpolating from the isobars on the Daily historical Weather M the sea-level pressure at each of following intersections of latitude circles and meridians: 1) ever meridian on the latitude circles, 10°, 20°, 70° and 80°N; 2) every 5° meridian on the latitude c 25°, 30°, 40°, 45°, 50°, 55°, 60° and 65°N and 3) the North Pole. Compares these charts with of Baur (1929) and Shaw (1936) and points out that the present series shows at times pressure v in the polar area as much as 10 millibars greater than either of the other series. Other differ noted. However, the analysis is least reliable for the polar area north of 75°N lat.—*Subject H ings:* **1. Pressure distribution charts 2. Northern Hemisphere pressure charts 3. Arctic Re 4. Northern Hemisphere.**—*M.L.R.*

5I–146 551.58

*§†U. S. Weather Bureau. Statistics Division, **Climatology of the Arctic regions.** *U. S. Weather Service, Special Study*, No. 58, Dec. 1946. 3 v. 101 figs., 94 tables, bibliog. (113 ite end of Pt. 3). **DWB**—Revision of the U. S. Weather Bureau, Preliminary Report, No. 36, C tology of the Arctic regions, originally written in the latter part of 1942. A study of possible air routes, but containing so much basic climatic data and discussion of permanent value tha as late as 1946 when reissued it had not been superseded with respect to quality and quantity o The report concerns the American, European and Asiatic Arctic and sub-Arctic regions; Gree and the Arctic Ocean and adjacent seas. Pt. I. includes a discussion of the general atmos circulation and the air masses involved and of the synoptic weather situations occurring mo quently. Pt. II. consists of a detailed discussion of certain weather factors such as visibili illumination, cloudiness and ceilings, temperature, precipitation, snow cover and sea ice. H includes tables and graphs of climatic data and a bibliography. The whole work contains sum of most of the available climatic data, both published and unpublished, on the Arctic and sub- up to 1942. Upper air as well as surface data is used. *Subject Headings:* **1. Climate of the 2. Climatic data 3. Synoptic climatology 4. Arctic Regions. I. Rigby, Malcolm II. Mills, H III. Lamoureaux, Clarence E. IV. U. S. Air Weather Service.**—*M.R.*

1947

5I–147 551.583.2:551.586:551

†*Berg, Lev S., **Klimat i zhizn'.** [Climate and life.] 2nd rev. and enl. ed. Moscow, OGI 356 p. figs., tables, refs. **DLC**—Recent changes in climate: warming of Arctic, recessi border of permafrost, warming in middle latitudes, in mountains, in Gulf Stream, decrease tinentality. Changes in historical times: moisture in atmosphere and soil, shrinking o decrease in river runoff, changes in vegetative cover, soil changes, deserts; changes in cent and Siberia and non-Soviet areas; in the level of the Caspian and in navigation conditions in Desiccation in latest epoch. Changes in relief accompanying drying out of last era. Cha biological distribution in sub-Arctic regions. Changes in sea life in Northern Hemisphere.

stribution of organisms in connection with glacial period. Loess as a product of increase in wind d soil formation processes. Climate of geological eras. Life and soil changes in heart of con- nent; pioneer life and paleontological data on ancient life. Completely annotated with index of atin names of plant and animal species and authors referred to in text; extensive bibliographies at d of each chapter, and index of subjects and geographical names. Chapter on loess is very com- ehensive. (*Same item as* G–51, July 1950, *MAB.*) *Subject Headings:* **1. Paleoclimates 2. Cli- atic variations 3. Bioclimatology 4. Warming of Arctic 5. Arctic.**—*C.E.P.B.*

5I–148 551.582(98)

Borisov, A. A., **Ob izuchennosti klimata Arktiki.** [Knowledge of the climate of the Arctic.] *riroda*, 36(6):9–12, June **1947.** 8 refs. **DLC**—Results of investigations carried out by many ientists during a long period of time (beginning with 1594—BARENTS' explorations of Novaya emlya) show that the most typical features of Arctic climate are: 1) a rise of temperature during ie of the winter months, 2) prevalence of temperature inversions, 3) dying out of wind in the nter of the region and in archipelagic areas and 4) monsoon winds and fogs. In conclusion it is dicated that the climate has warmed up during the last decades. *Subject Headings:* **1. Climate of e Arctic 2. Warming of Arctic 3. Arctic Regions.**—*A.M.P.*

5I–149 551.583(98)

Govorukhin, V. S., **Dinamika landshaftov i klimaticheskie kolebaniia na kraĭnem severe.** Landscape dynamics and climatological variations of polar regions.] *Vsesoiuznoe Geograficheskoe bshchestvo, Leningrad, Izvestiia*, 79(3):317–324, May/June **1947.** 15 refs. **DLC.** Translation om the Russian by U. S. Quartermaster Corps. Research and Development Branch, intelligence ction. Retyped by the Document Service Center, Jan. **1954.** 3 p. 11 refs. **DWB**—Sum- arizing the evidence in favor of the theory that the Arctic is cooling off, and comparing with evidence warming up, the author concludes that the period of cooling has ended, and that in the last 00 years there has been an appreciable warming. Glaciers and ice fields have receded or dis- ppeared, frozen ground has diminished, islands have disappeared, forests and lakes advanced and og tundra receded, etc. It is true that there is evidence that at one time since the Glacial epoch ere have been animal and plant forms characteristic of milder latitudes, since which time they ve been frozen in. This warming seems to stem from the warming of the North Atlantic and rctic waters, which has brought with it forms of bird and amphibious life unknown in these regions uring the past centuries. The warming has taken place in all sectors of the Arctic, even in North merica. *Subject Headings:* **1. Warming of Arctic 2. Climatic variations 3. Arctic.**—*M.R. A.M.S. Bul., V. 29, Oct. 1948*).

5I–150 551.311.173(26)

Karelin, D. B., **Izuchenie granits mnogoletnego l'da v poliarnom basseĭne.** [Study of the oundaries of enduring ice in the polar basin.] *Vsesoiuznoe Geograficheskoe Obshchestvo, Leningrad, zvestiia*, 79(4):481–482, July/Aug. **1947.** chart, table. **DWB**—During the period from 1940–1946, oviet pilots made flights toward the pole from the continent, crossing the boundaries of the "per- anent" ice pack 24 times. From data obtained during this period, a chart has been drawn, showing ie approximate limits of the boundaries of permanent ice during these years, and the paths of flight. uch a boundary is, naturally, rather indefinite and very changeable. (*Same item as* 5–124, May 950, *MAB.*) *Subject Headings:* **1. Arctic ice limits 2. Arctic Basin.**—*M.R.*

5I–151 551.524(98,99)

*Mecking, Ludwig, **Thermische Eigenschaften des Polarsommers besonders auf Spitzbergen** Thermal characteristics of the polar summer, particularly on Spitsbergen.] *Naturwissenschaften*, 4(7):201–207, **1947.** 6 tables, 25 refs. **DLC**—Discussion of the place and time balance of summer emperatures in the Arctic (especially from West Spitsbergen to Greenland) compared with the ntarctic; and brief remarks on the apparent warming of the Arctic. Tables: temperature differ- nces between the poles and 70° lat. (N and S) for different longitudes around the globe; monthly emperatures for 16 places (mostly between Franz Josef Land and Foxe Channel). *Subject Headings:* **. Summer temperatures 2. Warming of Arctic 3. Arctic 4. Antarctica.**—*Arctic Bibliography, Jo. 11165.*

5I–152 551.525.5:62(98)

†Muller, Siemon William, **Permafrost; or permanently frozen ground and related engineering roblems.** Ann Arbor, Mich., J. W. Edwards Inc., **1947.** 231 p. illus., tables, graphs, maps, lossary, diagrs., 70 refs. **DLC**—The comprehensive compilation of information on frozen ground henomena is based largely on articles by Russian scientists and contains a glossary of technical erminology pertinent to permafrost. The nature and the destructive action of permafrost are iscussed including its geography, physical and mechanical properties, origin, ground swelling

phenomena and icing. A considerable part of the book is devoted to engineering problems pecu to areas of permafrost, and its investigation in connection with these problems. Building c struction, road building, bridges, runways, and water supply problems are treated. Various meth for measuring ground temperatures and for conducting surveys are suggested. *Subject Headi* **1. Permafrost 2. Engineering meteorology 3. Arctic.**—*SIPRE Bibliography, No. 654.*

5I–153 551.509.1(09):551.58

Wexler, Harry and Tepper, Maurice, **Results of the wartime historical and normal map progr** *American Meteorological Society, Bulletin*, 28(4):174–178, April **1947. MH-BH**—An inventory of the results of one of the greatest undertakings in the history of meteorology. In Nov. 1941 the request of meteorologists of the Army Air Forces, U. S. Navy and Weather Bureau, a pro under the supervision of the latter was started to analyze daily Northern Hemisphere sea-level m for the 10-year period 1929–1939. Later the series was extended to cover the 40-year period 18 1939 (*see* 5I–207). The daily historical weather maps include 5 series of sea level and troposph maps. Normal monthly weather maps were drawn for sea and higher levels, wind speed, str lines and relative topography giving also vertical cross sections. Other maps were construc for five-day mean pressure, mean pressure for each month of the period 1899–1939, flying weat wind frequency, distribution and tracks of low pressure centers. Much of the material has b published; photostat, photoprint or microfilm copies are available for some of the unpublis material. *Subject Headings:* **1. Historical weather maps 2. Mean pressure charts 3. North Hemisphere. I. U. S. Weather Bureau.**—*A.A.*

1948

5I–154 551.510.41:551.5

Buch, Kurt, **Der Kohlensäuregehalt der Luft als Indikator der meteorologischen Luftquali** [Carbon dioxide content of the atmosphere as an indicator of its meteorological quality.] *physica*, Helsinki, 3:63–79, **1948.** 3 figs., 5 tables, 11 refs. **DWB, MH-BH**—Research on the rela between atmospheric composition and meteorological conditions began in 1921 when Finne made regular analyses of the quantity of nitrogen in the atmosphere, with negative results. T of CO_2 content were made in 1932 north of Iceland and related to air masses by Erik Pal Later (1935), tests were made over the Atlantic from Skagen to Boston and New York to Co hagen; in 1936 from Narvik to 80°45′N, 12°53′E and from Sept. 1933 to 1935 in Petsamo F Results of these analyses show that extreme Arctic air has least CO_2 and continental and tro air the most. The mean values are the following:

Arctic air of high latitudes	2.23 cm³/10 *l*
Arctic air	3.04–3.08
Maritime air (north and middle part of Atlantic Ocean)	3.14–3.31
Continental and tropical air	3.26–3.66

Also CO_2 increases from spring to autumn, and there has been a 10% increase in the past 35 y (average 2.82 to 3.22). The result of measurements of the change of CO_2 with altitude in a ma continental polar air, which stayed 36 hours over the sea surface are as follows:

Height	0.3	1.5	4.0	8.0	30.0 meters
Quantity of CO_2	3.07	3.12	3.12	3.14	3.29 cm³/10 *l*

(*Same item as* 7–30, July 1950 and 3B–196, Feb. 1952, *MAB.*) *Subject Headings:* **1. Carbon di in the atmosphere 2. Arctic air masses 3. Sea air 4. Arctic Regions.**—*M.R.*

5I–155 551.581:551.31

†Büdel, Julius, **Die Klima-morphologischen Zonen der Polarländer.** [Climatic-morphol zones in Polar regions.] *Erdkunde*, Bonn, 2(1/3):22–53, **1948.** 8 figs., bibliog. p. 52–53. D A classification of polar regions according to the morphological effects of the climate. A map s the principal zones, the glacier zone, the zone of moving soil-solifluction (frost debris and t zone), which is followed by the boreal forest. Photographs made by the author, member o Norsk Polarinstitutt, show the characteristic forms. The theory of the morphological classifica is discussed in detail, distinguishing between denudation on lines (Penck) and areal denuda *Subject Headings:* **1. Climatic morphology 2. Soil erosion 3. Morphological classifica 4. Polar Regions.**—*A.A.*

5I–156 551.521.2

Penner, C. M., **Note on radiative cooling in the free atmosphere over Arctic Bay.** *Jour Meteorology*, 5(2):69–70, **1948.** 2 figs., 3 refs. **DWB**—Data used were from twice-daily radio ascents at Arctic Bay (73°00′N, 84°30′W) for the period from Sept. 1945 to Aug. 1946. Only

ndings with clear skies were used. Fig. shows mean temperatures and dew points for winter and mmer. Using ELSASSER's radiation chart (2nd ed.), the resultant radiative flux was calculated ntervals of 100 mb from 1000 mb to 300 mb and the mean cooling of each layer of 100 mb thick- s was then computed. Results are shown in a fig. *Subject Headings:* **1. Radiational cooling Arctic Bay, Baffin Island.**—*M.L.R.*

5I–157 551.5(26)

Zubov, N. N., **V tsentre Arktiki.** [In the center of the Arctic.] Moscow, Izdat. Glavsev- rputi, **1948.** 391 p. photos, charts, figs. **DN-HO.** Also: **Arctic ice and the warming of the ctic. Being Chapters VI and VII of "In the center of the Arctic," an outline of the history of tic exploration and the physical geography of the central Arctic.** Translated by E. Hope. awa, Defence Research Board, Dept. of National Defence, April 26, **1950.** 72 p. photos., ., maps. **DLC**—In this unique book, ZUBOV has done for the Arctic what SCHOTT (*see* 5A–25 5A–34, Jan. 1954, *MAB*) did for the geography and oceanography of the Atlantic, Pacific and lian Oceans. The work is based on 35 years of experience in Arctic seas (in merchant vessels, m 1912, and on scientific expeditions in the 1920's and 1930's and on airplane reconnaissance os over all the Soviet Arctic seas in the 1940's). He has written a basic text on oceanography hydrography (*see item* 5A–41, Jan. 1954, *MAB*) and one on Arctic ice (*see* 5I–140). The present rk contains chapters on the geography, history, exploration by the Russians; physical conditions pth, submarine, magnetic and auroral conditions) and waters, ice and currents in ocean and nosphere. The final chapter is on the "warming of the Arctic." A table of 30 Arctic expeditions 07–1945) and their leaders, the farthest North lat., dates, etc. is appended. *Subject Headings:* **Arctic sea ice 2. Warming of Arctic 3. Arctic air circulation 4. Arctic expeditions 5. Arctic. Hope, E.** (*trans.*) **II. Canada. Defense Research Board.**—*M.R.*

1949

5I–158 551.463:551.311.181(268.3)

Defant, Albert, **Konvektion und Eisbereitschaft in polaren Schelfmeeren.** [Convection and bability of ice in the polar shelf seas.] *Geografiska Annaler*, Stockholm, 31(1/2):25–35, **1949.** gs., 3 tables, 4 refs., eqs. **DLC**—Discusses the vertical circulation in seas caused by the increase iensity due to evaporation, cooling of the surface in fall and the formation of ice. Basic equations derived and their application to polar shelf seas is shown (Barents Sea). Knowing the vertical tribution of temperature and salinity, the cooling process necessary for the formation of ice can be nputed. The depth of convective processes depends on the thickness of the formed ice. More- r, it is possible to compute the limits for regions where ice must occur and where the formation ice is not possible. *Subject Headings:* **1. Oceanic convection 2. Sea ice formation 3. Polar lf seas 4. Barents Sea.**—*A.A.*

5I–159 551.581:91.04(98,99)

Kovačević, Milan, **Polarni krajevi i njihovo istraživanje.** [The polar regions and their ex- ration.] *Yugoslavia. Hidrometeorološka Služba. Hidrometeorološki Glasnik*, 2(1/2):104–113, 9. 3 figs., 2 maps. In Serbocroatian. **DWB**—Astronomical, geographical and climatic racteristics of the Polar regions are discussed. It is pointed out that icebergs from the Antarctic t as far as 40° southern latitude, which corresponds to the latitude of Spain in the Northern misphere, far beyond the range of icebergs from the Arctic. Animal and human life in the polar ions are described and several instances of the penetration of man into polar latitudes during orical and modern time mentioned with emphasis on some recent expeditions. Maps of the poles two expedition photos are presented. *Subject Headings:* **1. Arctic expeditions 2. Polar climates cebergs 4. Arctic Regions 5. Antarctica.**—*G.T.*

5I–160 551.5:91.04(98)

Neunteufl, Josef, **Österreichs Anteil an der Erforschung der Arktis.** [Austria's share in the loration of the Arctic.] *Geographische Gesellschaft, Vienna, Mitteilungen*, 91(10/12):180–186, 9. 15 refs. **DLC**—Description of numerous expeditions to different parts of the Arctic in ch Austria participated, including the discovery of Franz Josef Land by BARENTS in 1596, the eorological expeditions connected with the two International Polar Years (1882–1883 and 1932– 3), and the Greenland expeditions of the 20th century. (*Same item as* 10–25, Oct. 1950, *MAB.*) *ject Headings:* **1. Arctic expeditions 2. Franz Josef Land 3. Greenland.**—*M.R.*

5I–161 551.513:551.583(98)

Petterssen, Sverre, **Changes in the general circulation associated with the recent climatic ation.** 6 figs., 3 tables, 3 refs., eqs. *Geografiska Annaler*, Stockholm, No. 1/2:212–221, **1949.** 'B—Statistical analysis of variations in the mean pressure distribution, the net zonal and merid-

ional transport, the total meridional transport, the meridional exchange and the number of cycl in various sectors of the North Atlantic and adjacent continental areas for the 40-year period 1 1939 indicates that the warming in the Arctic during the last two decades was due to chang the intensity of heat and cold sources resulting in some reduction in the zonal circulation, intensi tion of the meridional circulation, an increase in cyclonic activity and the meridional exchan air in the Balkans, the Mediterranean and the Newfoundland areas. Whereas pronounced t encies in some of the above factors cannot be definitely determined, there is ample evidence decrease in horizontal temperature gradient from south to north, and of increasing northward of air toward the Arctic in the European sector (resulting in increased temperature and rainfa southern Norway). (*Same item as* 4–57, April 1950, *MAB.*) *Subject Headings:* **1. General cir tion 2. Climatic variations 3. Warming of Arctic 4. Arctic.**—*M.R.*

1950

5I–162 55

*Bartels, Julius (*ed.*), **Geomagnetic K-indices, International Polar Year, August 1932 to Au 1933.** Preface by John A. Fleming. *International Union of Geodesy and Geophysics. Associ of Terrestrial Magnetism and Electricity, Bulletin*, No. 12d, **1950.** 53 p. mostly tables. **D** Extensive tables give K-indices for 44 stations at all latitudes. Location scale values an operating scientists at each station are also tabulated. A history of the Polar Year effort description of the purpose and methods of computing these K-indices is included in the pr The 1932–33 indices are intended for comparison with the available indices for 1940–1949. H tary indices are listed, and sudden commencements and solar flare effects are tabulated. G of planetary magnetic 3-hour range indices Kp arranged according to solar rotation interva days), and with sudden commencements indicated. *Subject Headings:* **1. K index 2. S commencements 3. International Polar Year, 1932–1933 4. Arctic Regions. I. Fleming, John** *M.R.*

5I–163 551.583.2:551.51

Brooks, C. E. P., **Climatic fluctuations and the circulation of the atmosphere.** *Weather*, 113–119, March **1950.** 2 figs., 2 photos, 4 refs. **DWB, MH-BH**—Changes of climate in Atlantic region since 7th Century are related to changes in atmospheric circulation, glaciers adva during periods of weak circulation and retreating during strong circulation. These are two persistent types maintained by ice conditions in Arctic Ocean; intermediate stages are tran The suggestion is made that the cause of these climatic perturbations is purely terrestrial. *item as* 5–88, May 1950, *MAB.*) *Subject Headings:* **1. Historical climates 2. Climatic vari 3. Atmospheric circulation 4. North Atlantic Region 5. Arctic.**—*C.E.P.B.*

5I–164 551.3

Denmark. Meteorologisk Institut, **Isforholdene i de Arktiske have. 1900–1939; 194** (latest recd.). [State of ice in the Arctic seas.] *Denmark. Meteorologisk Institut, Nauti teorologisk Årbog, Tillaeg* [*Appendix*], 1900–**1950** (latest recd.). charts. In English. **DWB** ports on the state of the ice in the Arctic seas were published by the Danish Meteorological In for each of the years 1901 (*sic*)–1939 and 1946–1949. For the intervening years, 1940–1945, stitute is endeavoring to collect data which will make possible a later publication of reports fro years." North Atlantic sea surface temperature charts were included through the 1939 (? Annual reports (currently prepared by Helge Thomsen, Chief of the Nautical Section) co discussion of the annual seasonal ice characteristics and of monthly details by regions plu charts showing ice types and extent for that particular year as contrasted with average co for 1898–1922. When publication resumed in 1946 data from the Soviet and part of the A Arctic were no longer available. (*Same item as* 5A–87, Jan. 1954, *MAB.*) *Subject H* **1. Arctic sea ice 2. Arctic Ocean 3. North Atlantic. I. Thomsen, Helge.**—*M.P.K.*

5I–165 551.311.18:551.4

Fletcher, Joseph O., **Floating ice islands in the Arctic Ocean.** *Tellus*, 2(4):323–324, No 2 figs. **MH-BH.** Also: Koenig, Lawrence S., **Ice islands in the Arctic Ocean.** *Alaskan Conference, 2nd, Mt. McKinley National Park, Sept. 4–8, 1951, Proceedings, p. 263–270*, pub. map. **DWB.** And also: Fletcher, Joseph O. and Koenig, Lawrence S., **Floating ice islan** *plorers Journal*. N. Y., 31 (1/2):1–10, Winter–Spring **1953.** 3 figs., table. **DLC**—The firs notes briefly the observation of large ice islands while flying from Alaska to the North Pol June, July and Aug. 1950. Islands first detected by radar, later observed visually. Th describes three of these islands (T-1, T-2 and T-3) and discusses their special features, origin, movement, etc. Location of the three islands is shown on a chart. The third co map showing the paths of the islands checked by radar and visual observations over a

years. All general movements were anticyclonic, suggesting a similar ocean current and isobaric tem in the lower atmosphere. The velocity at selected positions is computed separately for nmer and winter. Ellesmere Island is most probably the source of these ice formations. *Subject adings:* **1. Floating ice islands 2. Oceanic circulation 3. Fletcher's Ice Island 4. Arctic Ocean.** *M.R. and A.A.*

5I–166 551.5:016(98,99)

†Geographisches Jahrbuch, Gotha, v. 1, 1866, latest issue rec'd v. 60, **1950.** Gotha, Justus thes. Present editor: Ludwig Mecking. From 1866–1882 (v. 1–9) issued biennially; beginning h v. 10, issued annually (irregular) in 2 parts. **DLC**—This publication contains reviews of the rature in the field of geography and related subjects arranged by geographic area and/or by ject. Extensive references to the North Polar area will be found in vol. 44, 47 (*see* 3.7–11, March 2, *MAB*), 48, 52, 53, 56 and 58. Vol. 60, by Leonid Breitfuss, is devoted entirely to the literature this area published from 1932–1947 and includes many references to its meteorology or climatology 4.4–21, April 1953, *MAB*). *Subject Headings:* **1. Climatological bibliographies 2. Oceanophic bibliographies 3. Arctic bibliographies. I. Mecking, Ludwig II. Breitfuss, Leonid.**—*L.R.*

5I–167 551.578.4:551.521(98)

Gordon, A. R., Jr. and Woodworth, W. C., **Some inter-relationships of snow and ice conditions l weather in the Arctic.** *American Meteorological Society, Bulletin,* 31(8):271–278, Oct. **1950.** gs., 10 refs. **MH-BH**—A review of studies made in various sectors of the Arctic, notably by the rwegians (SVERDRUP, MALMGREN, MOSBY and others) and the Russians. Effect of ice and snow the radiative balance at the surface and in the lower atmosphere, effect of cloud cover and wind snow and ice conditions and effect of snow cover on ice discussed. Status of forecasting sea ice iewed; need for concerted program stressed. (*Same item as* 2.3–134, Feb. 1951, *MAB.*) *Subject adings:* **1. Snow cover 2. Topographic effects 3. Radiation balance 4. Arctic.**—*M.R.*

5I–168 551.311.1(084.4)(126)(98,99)

Hamburg. Deutsches Hydrographisches Institut, **Atlas der Eisverhältnisse des Nordatlanti-en Oceans und Übersichtskarten der Eisverhältnisse des Nord- und Südpolargebietes.** [Atlas ce conditions in the North Atlantic Ocean and general charts of the ice conditions of the North l South Polar regions.] Hamburg, **1950.** 24 p. 34 col. charts, bibliog. p. 24. *Hamburg. utsches Hydrographisches Institut,* No. 2335. **DLC, DWB**—Monthly charts of ice probability, wing also the distribution of different kinds of ice and icebergs with a description of ice conditions. arts Nos. 13, 26 and 27 give a classification of ice types. Periods used: 1919–43 for the North antic and Arctic, and 1929–39 for the South Polar regions. A valuable concept of the geography naritime ice is given in the introduction with a discussion of ice formation, ice currents and of classification according to forms and geographic types. (*Same item as* 5A-92, Jan. 1954, *MAB.*) *ject Headings:* **1. Ice distribution 2. Sea ice classification 3. Marine atlases 4. North Atlantic Polar Regions. I. Büdel, Julius** (*ed.*).—*A.A.*

5I–169 551.5:629.13(268)

Karelin, D. B., **Novyĭ polet k severnomu poliusu.** [A new flight to the North Pole.] *Vsesoiuz-Geograficheskoe Obshchestvo, Leningrad Izvestiia,* 78(1):123–124, **1946.** fig. **DLC.** Also: Haynes, C., **Polar weather flights.** *Weather,* 4(1):11–15, Jan. **1949.** plate, 2 figs. And: Phillips, Reyn-s, **Polar commuters.** *Boeing Magazine,* 20(12):10–13, Dec. **1950.** illus. **DWB**—First article cribes briefly flight to the North Pole, via Khatanga Bay, Cape Cheliuskin and Cape Molotov he Severnaya Zemlya group and return via Kotelny Island in New Siberian Group and Chokur-h near the mouth of the Indigirka, early in Oct. 1945 to make autumn ice observations in the tern sector of the Russian Arctic (*same item as* 1–40, Jan. 1950, *MAB*). The second is an account flight from Fairbanks, Alaska to the North Pole and return on Aug. 2, 1948. Accompanied by ss-section showing place of lowest temperature at 20,000 ft not at pole but about 80°N of the ska side (*same item as* 1–41, Jan. 1950, *MAB*). The third discusses problems of flying over the tic Ocean. A chart shows various weather reconnaissance tracks flown in and around Alaska to the North Pole. *Subject Headings:* **1. Airplane weather reconnaissance 2. Upper air observa-3. Ice observation 4. Arctic Ocean.**—*M.R.*

5I–170 551.524.34:551.526.6:551.509.33(261,268)

Schell, Irving I., **On some temperature trends in Iceland, Northern Europe, and northwestern .A. associated with prolonged periods of severe and light ice off Iceland.** Woods Hole Ocean-aphic Institution, Contract N6onr-27705, Technical Report, Nov. **1950.** 43 p. tables, chart, iog. **DWB**—Annual mean temperatures have been smoothed by obtaining 10-year averages, these data for 11 decades (1831–1940) and one incomplete decade (1941–1949) have been piled for Archangel, Bergen, Copenhagen, Edinburgh, Helsinki, Leningrad, Moscow, New

Haven, Oslo, Stockholm, Stykkisholm and Vardö. These temperatures have been correlated w ice data for seas around Iceland, Archangel and Vardö for current, subsequent and previous decad No relation could be found between ice conditions and temperatures of the previous decade temperature anomaly in decade subsequent to severe ice conditions was generally negative, and af light ice, positive. An attempt is made to explain these relations on the basis of currents of North Atlantic and Arctic. Effect of cities on temperature records over long periods is discussed appendix. (*Same item as* 3.7–128, July 1952, *MAB.*) *Subject Headings:* **1. Temperature trer 2. Long range forecasting 3. Urban influences 4. Arctic sea ice 5. North Atlantic Ocean 6. Ar Ocean. I. Woods Hole Oceanographic Institution II. Contract N6onr-27705.**—*M.R.*

5I–171 551.594.7(

Schenk, Karl, **Die Funkausbreitung als Hilfsmittel in der Polarwetterforschung.** [Ra propagation as an aid in polar weather investigation.] *Polarforschung*, Kiel, 2(1–2):332–336, 19 **DWB**—A discussion of experiences in the Arctic leads to the conclusion that a direct connect between radio reception, ionosphere and weather has not yet been clearly shown. Correlation is with local surface weather but with large scale, especially stratosphere conditions, e.g., height 500 mb surface. *Subject Headings:* **1. Radio reception 2. Arctic.**—*C.E.P.B.*

5I–172 551.311.181:551.46(

Seliakov, H. IA., **Nekotorye nabliudeniia nado l'dom i protsessami, sviazannymi s ego ob zovaniem.** [Some observations on ice and the processes connected with its formation.] *Akaden Nauk SSSR, Doklady*, 70(5):821–824, **1950.** 4 figs., 4 refs. **DLC**—In connection with studies the freezing of rivers and seas in the Arctic, a number of conclusions were reached regarding meth of formation of ice crystals, propagation of freezing and thawing, effect of container, types of crys evaporation of crystals and energy released during freezing process. (*Same item as* 8–147, *A* 1950, *MAB.*) *Subject Headings:* **1. Freezing nuclei 2. Sea ice formation 3. Arctic oceanogra 4. Arctic.**—*M.R.*

5I–173 551.311.184:551.465(

Shuleĭkin, V. V., **Teoriia dreĭfa ledianykh poleĭ v ee sovremennom sostoianii.** [The theory of ice fields in its present status.] (In: Leonov, A. K. (*ed.*), **Pamiati IUliia Mikhaĭlovi Shokal'skogo.** [In memory of IUliĭ Mikhaĭlovich SHokal'skiĭ.] Moscow, **1950.** p. 63–81. 6 10 refs., 19 eqs. **DLC**—The author defends his theory of ice drift, which is based on the considera of the friction between air and ice (coefficient 0.02), as well as between ice and water (coeffic 0.008–0.01) showing that the theoretical results agree with measurements made during the "Seve Polius Expedition." In particular, the ice drift is about twice as fast as the speed of the o current, the deviation angle between wind and ice drift decreases with increasing wind speed, the ratio between the speed of the ice drift and the wind speed increases with the wind. The th holds for the drift near a coast (Greenland) if the coastal effect on the ocean current is conside *Subject Headings:* **1. Ice drift theory 2. Ocean currents 3. Papanin Expedition, 1937–1938 4. Greenland Current 5. Arctic.**—*A.A.*

5I–174 551.524.3:551.311.18

*Woods Hole Oceanographic Institution, **Research in relations between the North Atlanti ice and Arctic weather conducted during the period February 15 to May 15, 1950.** Its Con N6onr-27705, Periodic Status Rept., Ref. No. 50–23. June **1950.** 4 p. tables. **DN-HO**— temperature deviation at Archangel (USSR) following either a severe or light ice decade ap usually greater in the decade after, rather than in the decade contemporary with the ice ext decade. The temperature deviation is greater during, rather than in the decade following th extreme decade at Stykkisholm (Iceland) where the persistance effect appears to depend o preceding ice in its own area solely. No consistent relation was indicated between the ice off Ic and the preceding temperature of Iceland, Archangel, Vardö, and other stations. The depa from the normal in iceberg severity in 1950 off Newfoundland was computed and a severity a average predicted. *Subject Headings:* **1. Temperature variations 2. Arctic sea ice 3. Regions.**—*SIPRE Bibliography, No. U6201.*

5I–175 551.5(98,99

†Zavatti, Silvio, **Saggio de bibliografia polare.** [Attempt at a polar bibliography.] M Casa Ed. G. D'Anna, **1950.** 67 p. **DLC**—Preceded by a glossary giving definitions of 3 (most of which apply to various types of ice), this review of international polar literature in well over 200 references to books, reports, articles, periodicals, serials and maps. The liter referred to mainly deals with general aspects, political problems and the exploration of the regions, classified according to country of origin. Many of the papers are abstracted or comm on separately. *Subject Headings:* **1. Polar literature 2. Polar bibliographies 3. Ice glos 4. Glossaries.**—*G.T.*

1951

5I–176 551.513

Aubert, Eugene J. and Winston, Jay S., **A study of atmospheric heat-sources in the Northern emisphere for monthly periods.** *Journal of Meteorology*, 8(2):111–125, April **1951.** 15 figs., refs., 7 eqs. **MH-BH**—The energy changes, associated with the general circulation, are discussed oretically and calculated from charts of anomalous heating or cooling in the layer from sea level 10,000 ft, based on previous work by SVERDRUP, JACOBS, WEXLER and others. Charts of Northern emisphere show horizontal and vertical heating for various months in 1945 and normal horizontal ating in Jan., April, July and Oct. Departures from normal are shown for Jan. and July 1945. arked changes, occurring from month to month and year to year, exceed normal variation. (*Same n as* 2.11–69, Nov. 1951, *MAB.*) *Subject Headings:* **1. General circulation 2. Energy exchange Northern Hemisphere.**—*M.R.*

5I–177 551.583.14

Centkiewicz, Czesław, **O zmianach klimatycznych Arktyki.** [On climatic changes in the ctic.] *Gazeta Obserwatora, PIHM*, Warsaw, 4(9):8–11, Sept. **1951. DLC**—The author records ne general data on temperature increase in the Northern Hemisphere and in the Arctic region in rticular. This warming up is explained by a global intensification of the general atmospheric culation which is in interaction with warm sea currents. The warming results in decrease of ctic sea ice, shrinkage of glaciers and northward migration of animals (especially fish) and plants. *bject Headings:* **1. Warming of Arctic 2. Climatic variations 3. Glacial ablation 4. Arctic.**—*M.P., G.T.*

5I–178 551.311.184(268)

Emery, Kenneth O. and Revelle, Roger, **Large floating islands of the Arctic Ocean.** *Geological ciety of America, Bulletin*, 62(3):325, March **1951. DLC.** Also: Panov, D. G., **Plovuchie ledianye rova v poliarnom basseĭne.** [Floating ice islands in the Polar Basin.] *Priroda*, 42(2):113–114, **53. DLC**—First report refers to discovery of "ice islands" made by the 325th Reconnaissance uadron, U. S. Air Force. Suggests that ice islands may have been formed (1) by piling up and ckening of pack ice on the windward shores of Arctic islands, (2) detachment of the margins of ice os or (3) floating of previously submerged Pleistocene shelf ice. Establishment of a base camp on island and detailed geomorphological studies will be necessary to determine origin of the islands. NOV agrees with the hypothesis that these islands could be relics from shelf ice formed during the aternary period. *Subject Headings:* **1. Floating ice islands 2. Quaternary period 3. Arctic. Panov, D. G.**—*M.L.R. and A.A.*

5I–179 551.582.1:551.586:58(98)

†Hare, F. Kenneth (*McGill Univ.*), **Some climatological problems of the Arctic and sub-Arctic. n: Compendium of Meteorology.** Boston, American Meteorological Society, **1951.** p. 952–964. igs., table, 69 refs.) **MH-BH**—The general literature on the climatology of the Arctic regions is viewed briefly and the inadequacy of meteorological data for the Arctic is stressed. The work of STICH (*see* 5I–216), SANDERSON, etc. on the relationship between climate and vegetation in the oreal forest is reviewed critically and the author concludes that over most parts of the Boreal gion of the earth, the mid-summer temperature is the principal factor determining variations in owth of the common tree species and that variations in summer precipitation have little or no ect on tree growth except near the forest steppe boundary. The zonal divisions of natural vegeta-n—the Arctic tree line, the Boreal forest proper and the southern limit of Boreal forest—are related with SUPAN, KÖPPEN and NORDENSKIÖLD isotherms and with THORNTHWAITE's thermal iciency function with which a high correlation is found. The correlation between climate and rmafrost is briefly summarized. The general problem of the influence of ice formation on air sses and the climatological conditions favoring ice formation are reviewed with particular reference recent studies on the climatology and ice conditions in Hudson Bay. Finally, the problem of the lacial anticyclone" is reviewed. The data of HOBBS are presented and the contradictory data sed upon recent exploration are presented. (*Same item as* 3.10–9, Oct. 1952, *MAB.*) *Subject adings:* **1. Arctic climatology 2. Forest limits 3. Sea ice formation 4. Glacial anticyclones Arctic.**—*I.L.D.*

5I–180 551.501.9(98,99)

†Hobbs, William H., **First international Polar Year, 1882–1883.** (In: **Encyclopedia Arctica,** l. 7, Meteorology and Oceanography, [unpub. ms., photostat, July **1951,** Pt. 5:1–5] bibliog. 4–5); Seyd, Felizia, **Second International Polar Year, 1932–1933.** *Ibid.* [3 p. following p. 5]. bliog. p. 3. **DWB**—After a brief general history of Arctic expeditions, the locations of all polar tions maintained by the various participating nations during the first and second International lar Years are listed. *Subject Headings:* **1. Arctic weather stations 2. International Polar Year 32–1883 3. International Polar Year 1932–1933. I. Seyd, Felizia.**—*G.T.*

5I–181 551.501.9

Illingworth, Frank, **North of the circle.** London, W. Hodge, **1951.** 254 p. plates, r **DLC**—In Chap. XVIII (p. 218–236) the importance of Arctic weather stations, the locatior many stations in Greenland and European or Asiatic Arctic, the history of Arctic weather serv Canada's Arctic network, weather flights from Fairbanks to the pole, early land expeditions recent sea expeditions for meteorological purposes, installation, supply and living problems faced personnel at Arctic stations in winter and summer, experiences during last war in manning Gerr and allied stations in Greenland and North Atlantic area are described in some detail in a pop manner. Chap. XVIII (p. 237–244) deals with the melting of the Arctic ice due to warm *Subject Headings:* **1. Arctic weather stations 2. Warming of Arctic 3. Arctic.**—*M.R.*

5I–182 551.5:06

†Laursen, Vigo (*comp.*), **Bibliography for the Second International Polar Year, 1932–33.** Co hagen, I.M.O. Temporary Committee on the Liquidation of the Polar Year, 1932–33, **1951.** 25 **DWB**—The references are arranged according to countries and according to main subject. Ur each country (arranged in alphabetical order) the references are subdivided into: A. Special Exp tions and B. General Participation. Among the special expeditions were many to the Ar among them the Austrian to Jan Mayen, the Danish to Greenland (3 stations); the British to Rae, Canada, the Polish to Bear Island, the Russian to Franz Josef Land and the U. S. to P Barrow. The volume does not contain an author index. (*Same item as* 4.1–28, Jan. 1953, *M.* *Subject Headings:* **1. Arctic bibliographies 2. International Polar Year, 1932–1933. I. I.N Temporary Committee on the Liquidation of the Polar Year, 1932–1933.**—*M.L.R.*

5I–183 551.506.9

Macht, Hans G., **Meteorologische und fliegerische Erfahrungen von deutschen Wetterer dungsflügen in der Arktis, 1941–1944.** [Meteorological and flying experiences of German wea reconnaissance flights in the Arctic, 1941–1944.] *Polarforschung*, 3(1):2–9, **1951. DWB**—Au carried out regular flights N of 70°N, June 1941–Nov. 1944. Most of the material was lost bu describes meteorological and flying experiences. Accounts include summer sea fog, undistu southwesterly type, Arctic Front disturbance zone and warm fronts, shower weather in Arctic ai fine weather types with descending air in late spring—early summer and in autumn. Sectio flying includes organization, navigation and special flying risks in the Arctic. (*Same item as* 3. Feb. 1952, *MAB.*) *Subject Headings:* **1. Observational data 2. Aeronautical meteorology 3. A Regions.**—*C.E.P.B.*

5I–184 551.582.

*†Petterssen, Sverre; Jacobs, Woodrow C. and Haynes, Benarthur C., **The meteorology o Arctic Region.** (In: **Encyclopedia Arctica,** Vol. 7, **Meteorology, and Oceanography** [unpub. photostat, July **1951.** Pt. 1a–1d. 32 tables, 56 refs.) **DWB**—The most comprehe collection of climatic information for the whole Arctic available up to this time in one place. N ous tables are given for all climatic elements including also special data for the free atmos upper winds, ceiling heights and visibility conditions. Furthermore, maps are presented for pr and temperature and meridional cross sections for the free atmosphere are computed. Meri prolfiles of the climatic elements show the characteristic features of the Arctic climate. Th cussion, though highly competent, is given in elementary manner so that nonspecialists als utilize the information. The cause of abnormal acoustical and optical phenomena in the is explained in some detail, as well as glaze and hoar frost, the inversions, humidity condition some synoptic features. *Subject Headings:* **1. Climate of the Arctic 2. Climatic charts 3. M onal cross sections 4. Arctic Regions.**—*A.A.*

5I–185 551

Polarforschung, Jahrg. 1, 1931; latest issue received Jahrg. 21, No. 2, **1951.** Kiel, pu Archiv für Polarforschung. Semiannual. Jahrg. 14(1944) apparently never published. Jah 1946–Jahrg. 20, 1950 issues labelled Band 2; Jahrg. 21, 1951– issues labelled Band 3. Holdin **NNA, DLC**—Contains brief reviews of research in both polar regions, notices of new expe and books, and (since 1947) some original articles on the Arctic and Antarctic. *Subject He* **1. Periodicals 2. Polar research 3. Arctic 4. Antarctica.**—*Arctic Bibliography, No. 13631.*

5I–186 551.311.181:629.1

Prawdzic-Layman, Krzysztof, **Morskie lody polarne.** [Polar sea ice.] *Gazeta Obser PIHM*, Warsaw, 4(8):6–8, Aug. **1951.** fig. **DLC**—A popular article dealing with ice for and navigation in Arctic Seas. After having explained why and how sea water freezes a peratures sensibly lower than 0°C, the author describes the dynamics of formation and the cha istic peculiarities of various forms of sea ice as needle, slob, pancake, field, pack, hummo

amukh. The question of navigation in Arctic seas and the importance of the newly inaugurated orthern Sea Route are discussed. *Subject Headings:* **1. Arctic sea ice 2. Sea ice formation 3. Arctic vigation 4. Arctic Seas.**—*A.M.P.*

5I–187 551.509.6:551.311.17

Schindler, Gerhard, **Die Bedeutung der polaren Eismassen.** [The importance of the polar ice asses.] *Polarforschung*, Kiel, 3(1):14–17, 1951. 20 refs. **DWB**—Referring to a project to elt the polar ice, author summarizes results—a rise of sea level by 55 m, decrease of earth's rotation eed, rise of temperature, more oceanic climate, changes of wind systems and climate and changes the biosphere. *Subject Headings:* **1. Polar ice 2. Ablation 3. Warming of Arctic.**—*C.E.P.B.*

5I–188 551.583.13:551.524:639

Schnakenbeck, W., **Klimaschwankungen in der Arktis beeinflussen die Fischerei.** [Climate riations in the Arctic influence fishing.] *Umschau*, Frankfurt a.M., 51(11):324–325, June **1951.** ., ref. **DLC**—The penetration of various species of fish into northern seas, far beyond their ual range, is attributed to warming of the Polar region. Temperature records for the Netherlands d Norway covering long periods and indicating a noticeable rise in temperature during the last cades, are referred to and those for the Netherlands particularly recommended as they go back the beginning of the 18th century. (*Same item as* 3.7–181, July 1952, *MAB.*) *Subject Headings:* **Climatic variations 2. Air temperatures 3. Fish migration 4. Norway 5. Netherlands Arctic Regions.**—*G.T.*

5I–189 551.583:634.94:529(09)

Schulman, Edmund, **Tree-ring indices of rainfall, temperature, and river flow.** (In: **Compndium of Meteorology.** Boston, American Meteorological Society, **1951.** p. 1024–1029. 4 figs., tables, 28 refs.) **MH-BH**—A comprehensive and succinct review of the history of dendrochronogy. The underlying principles of selection, cross dating and sensitivity of trees; the methods of re sampling, preparation of cores, etc.; errors in the unit of individual tree ring and possible causes these errors; causes of errors of interpretation of dendroclimatic series; the relation of dendroronology to meteorology, astronomy, geology, botany, forestry, etc. are discussed; a description tree ring series showing indications of past rainfall and river flow in western United States and of e relationship between tree ring fluctuations and temperature in the Arctic is presented; and the e of tree ring chronologies as indicators of long term climatic fluctuations is reviewed. (*Same m as* 3.10–14, Oct. 1952, *MAB.*) *Subject Headings:* **1. History of dendrochronology 2. Climatic riations 3. Tree ring indexes 4. Western United States 5. Arctic.**—*I.L.D.*

5I–190 551.311.1:656(98)

Stefansson, Vilhjalmur, **The uses of ice.** (In: **Encyclopedia Arctica, Vol. 7, Meteorology and ceanography,** [unpub. ms., photostat, July **1951,** Pt. 10a–10b].) **DWB**—A completely descriptive eatment of the many aspects of Arctic ice and its use for landing aircraft, bases for air, land or sea erations or weather stations, for surface transportation, etc. Salt water ice, coastal ice, drift , pack ice, inland or snow ice, permanent drifts, glaciers, ice caps, lake ice and river ice are disssed separately. Seasonal and regional differences are mentioned but mainly for the North merican Arctic. Use of rivers, lakes and glaciers as landing fields and practical suggestions for ing in the Arctic are emphasized. The transportation of supplies over ice, snow or glaciers cupies most of Pt. 10b, with special emphasis on experience in the Greenland or Siberian Arctic. *ubject Headings:* **1. Arctic transportation 2. Arctic ice 3. Arctic.**—*M.R.*

5I–191 551.46:551.311.181 91.04(268)

Sverdrup, Harald U., **Oceanography of the Arctic.** (In: **Encyclopedia Arctica,** v. 7, **Meteorology d Oceanography** [unpub. ms., photostat, July **1951.** Pt. 6] 15 refs.) Also: **Arctic sea ice.** *Ibid.*, Pt. 7. tables, 7 refs. graph (fold.).—**Submarines in the Polar Sea.** *Ibid.*, Pt. 8. **DWB**—he oceanographic conditions within the Arctic Basin and the adjacent seas are outlined, discussing e temperature distribution and, qualitatively, the effects of river discharge and excess of precipitaon over evaporation on salinity. The dependence of the ice drift on wind speed and direction is alyzed. The formation, physical characteristics, modification and terminology of Arctic sea are explained in Pt. 7. The author strongly advocates the exploration of the Arctic by subrines, despite the difficulties and hazards summarized in Pt. 8. *Subject Headings:* **1. Arctic eanography 2. Submarine expeditions 3. Arctic sea ice 4. Ice drift 5. Arctic Ocean.**—*A.A.*

5I–192 551.311.181:656(98)

Weaver, John C., **The ice of seas in the North American Arctic.** (In: **Encyclopedia Arctica. l. 7, Meteorology and Oceanography** [unpub. ms., photostat, July **1951.** Pt. 12] refs.) **DWB**—Discussion of Arctic sea ice in general and of the specific conditions of the (1) East Greenland Pack,

(2) Northeast North American Pack, (3) Hudson Bay and Strait ice, (4) the Northwest Passage a (5) the Arctic seas off Alaska. The movements, type and thickness of ice are discussed and t season of navigation as determined from experience in the past and at present mentioned for numer specific places in the North American Arctic. *Subject Headings:* **1. Arctic sea ice 2. Sea 3. Arctic navigation 4. North American Arctic.**—*M.R.*

5I–193 551.506.5(98,

Wegmann, E., **Entwicklungsstufen der Polarforschung.** [Stages of development of polar vestigations.] *Polarforschung*, Kiel, 3(1):30–32, 1951. **DWB**—A brief account of 3 stages: 1) to graphical exploration; 2) movements of atmosphere and hydrosphere and land ice and 3) histor and geological investigations, past climates, and deep-sea are studied. (*Same item as* 3.2–30, H 1952, *MAB.*) *Subject Headings:* **1. Polar research 2. Arctic 3. Antarctica.**—*C.E.P.B.*

5I–194 551.586:59:525.5

Weyer, Edward M., Jr., **Daylight and darkness in high latitudes.** (In: **Encyclopedia Arct Vol. 7, Meteorology and Oceanography,** [unpub. ms., photostat, July **1951.** Pt. 13]. 9 fl **DWB**—The period of daylight (sunlight and twilight) at different latitudes in the Arctic is discus and shown quantitatively in nomograms. The effect of sunlight and daylight on humans animals is treated and the influences of moonlight, atmospheric refraction, effect of altitude, clo ness, water bodies, etc. mentioned in respect to their importance for human activities. Psy logical factors produced by darkness or continual daylight are not neglected. (*Same item as* 5.6– June 1954, *MAB.*) *Subject Headings:* **1. Daylight duration 2. Twilight duration 3. Physiolo climatology 4. Arctic.**—*M.R.*

1952

5I–195 551.5:016:91.04

†Armstrong, Terence E., **The northern sea route; Soviet exploitation of the North East Pas** *Scott Polar Research Institute, Special Publication*, No. 1, **1952.** 162 p. 6 plates, 7 maps, p 406 refs. **DLC**—This volume is a history of the exploration of the North East Passage and a count of the present shipping, equipment used, the scientific support and the economic and stra usefulness of the route. The meteorologist will be interested in the rather short description o fog and storm conditions with some data and the review of scientific work (hydrography an drology, meteorology, ice and ice forecasting, geomagnetism and scientific institutes). A l 87 polar observation stations shows the year when observations began; coordinates are not give a general location map is added. *Subject Headings:* **1. Arctic research 2. Polar stations 3. . bibliographies 4. Arctic.**—*A.A.*

5I–196 551.525.5:551

Benninghoff, William S., **Interaction of vegetation and soil frost phenomena.** *Arctic*, 5(44, March **1952.** 5 figs., refs. **MH-BH**—On the basis of many previous investigations m different permafrost areas, the author discusses the influence of soil frost on plants and vice Permafrost produces specific climatic conditions for vegetation and decreases duration of g season. Frozen soil injures and deforms the root systems of trees, and limits the penetration o into soil; it disrupts the anchoring function of roots so that trees can be easily overturned by s Frost in soil also hinders the downward percolation of water and increases the moisture near t surface. Soil freezing and thawing have different intensities for bare soils and soils cove vegetation, depending on heat exchange, moisture, snow cover, etc. It was found that t extends deeper in bare soil and the level of permafrost is highest under a surface covered with Plant roots and underground stems have certain mechanical roles in the genesis of soil fro conclusion, the author proposes that geologists, botanists and soil scientists should conti vestigations for application to Alaskan economy, where permafrost areas occur in more tha the territory. (*Same item as* 4.7–111, July 1953, *MAB.*) *Subject Headings:* **1. Permafrost freezing effects 3. Vegetation influences 4. Alaska 5. Arctic.**—*N.T.Z.*

5I–197 551.509.6:551.521

Bensin, Basil M., **Arctic garden solar reflectors and radiators for northern climates.** Fa Alaska, Printed by author, **1952.** 7 p. 6 figs. Price: $.25 from Adler's Book Shop, Bo Fairbanks.—An elaborately worked out but inexpensive system of solar heating for ve growing in Arctic climates (such as at Fairbanks) is described and illustrated in this pa Aluminum foil reflectors are arranged at the optimum angles and distances from the rows tables, either in the hot bed, cold frame or in the open field. The reflectors can be adjusted angle from 0° to 90° from the vertical, depending on the angle of sun. The base board is black to serve as a radiator. Combined there is added light intensity and increased soil

nperature at the critical times or seasons for various stages of the crop. *Subject Headings:* **1. Arctic** rticulture **2. Solar reflectors 3. Artificial microclimates 4. Alaska 5. Arctic.**—*M.R.*

5I–198 551.501.9(268)

Crary, A. P.; Cotell, R. D. and Sexton, T. F., **Preliminary report on scientific work on "Fletcher's Island," T3.** *Arctic*, 5(4):211–223, Dec. **1952.** 12 figs., refs. **DLC**—One of the large ice nds in the Arctic Ocean was occupied in March 1952 for the main purpose of establishing a rmanent meteorological station there. Weather observations were started on April 1, and are ng conducted at the rate of two upper air soundings a day and surface observations every hour. e purpose of this report, however, is to report results of the nonmeteorological research conducted the island (structure of the island, movement of ice island and ice pack, seismic and gravitational dies, oceanography, fauna, etc.). *Subject Headings:* **1. Arctic weather stations 2. Floating ice nds 3. Fletcher's Ice Island 4. Arctic Ocean.**—*G.T.*

5I–199 551.578.46:629.114

Frei, Otto, **Fahrzeuge in Eis und Schnee.** [Vehicles in ice and snow.] *Umschau*, 52(2):52–54, n. 15, **1952.** 5 figs. **DGS**—Describes various types of motor transport on sleds and/or caterpillar cks and plan of an Arctic wind motor. *Subject Headings:* **1. Snow sleds 2. Arctic wind motor.**—*E.P.B.*

5I–200 551.582(98)

Gorbatskiĭ, G. V., **O nekotorykh putiakh fisiko-geograficheskogo izucheniia arkticheskoĭ shi v sviazi s ee osnovnymi prirodnymi osobennostiami.** [Method of studying the physical ography of the Arctic land regions on the basis of their natural characteristics.] *Leningrad. niversitet. Uchenye Zapiski*, No. 152, Ser. Geograficheskikh Nauk 8, Geografiia, **1952.** p. 159–182. refs. **DLC**—The physico-geographical layer according to the author lies between the lower nit of permafrost and the tropopause, but the general discussion presented in this paper is limited ostly to the processes immediately below and above the earth's surface (vegetation, permafrost, c.). Claims that the hydrologic equation at present is not closed in the Arctic due to the melting the permanently frozen ground, contributing more to runoff than precipitation can supply. The thor does not support his ideas by climatic data, claiming that they are incorrect. *Subject Heads:* **1. Climate of the Arctic 2. Hydrologic cycle 3. Permafrost 4. Arctic.**—*A.A.*

5I–201 551.311.17(268)

Koenig. Lawrence S.; Greenaway, K. R.; Dunbar, Moira and Hattersley-Smith, Geoffrey, **ctic ice islands.** *Arctic*, Ottawa, 5(2):67–103, July **1952.** 20 figs., refs. Also: Montgomery argaret R., **Further notes on ice islands in the Canadian Arctic.** *Ibid.*, 5(3):183–187, Oct. **1952.** photos, chart. **DLC**—Discovery of floating ice islands in the Arctic Ocean in 1946 and their servation since that time by U. S. and Canadian air reconnaissance squadrons is reported by L. S. DENIG (U.S.A.F.) and K. R. GREENAWAY (R.C.A.F.). These islands differ from ordinary drift in their remarkable smoothness and their stability. They move at an average speed of 1–2 ./day. Some 30 such islands varying in size from a quarter of a mile to 7–8 miles across and several aller fragments have been discovered and a landing was made on one of them. Historical refer-ces were searched by M. DUNBAR with a view of finding travellers' descriptions which would ear to apply to this specific type of ice island. The origin of the islands is traced back to north lesmere Island by G. HATTERSLEY-SMITH. Photographs of the ice islands are presented. Their cular movement in the Arctic Ocean and their positions at various times in the Canadian Archi-lago are shown on maps. The second article contains a revision of the map in the first article owing the location of 31 new islands. The general distribution of the islands is about the same, t their range has been extended. The survey shows the persistence of ice cover over a number of ars in three areas and the existence of a northward drift along the west coast of Boothia Peninsula. vo unexplained land-ice features were observed in the interior of Ellesmere Island: 1) a narrow ake," bounded at each end by a glacier, 15 mi up the valley leading to the southeast arm of Ayles y and 2) a group of "lakes" lying just east of the great Chapman Glacier (both features shown in otographs). *Subject Headings:* **1. Floating ice islands 2. Arctic Ocean. I. Montgomery, argaret.**—*G.T., M.L.R.*

5I–202 551.583.2(98)

Maksimov, I. V., **O vos'midesiatiletnem tsikle kolebaniĭ klimata zemli.** [On the eighty-year cle of climatic variations on the earth.] *Akademiia Nauk, SSSR, Doklady*, 86(5):917–920, **1952.** tables, 11 refs. **DLC**—Periodogram analysis made for long series of climatic indicators (for mple: ice conditions near Iceland, 1590–1930; Caspian sea level, 1820–1930; severity of winters in stern Europe, 1215–1905 and tree rings in California, 1295 B.C.–1905 A.D.). The average gth of the quasiperiodic variations is about 80 years. Decreasing continentality in Europe and

less ice in the Arctic observed from 1894 to 1934. Sunspot numbers show a similar variation of years. Large solar activity associated with mild winters. (*Same item as* 4.6–203, June 19 *MAB.*) *Subject Headings:* **1. Climatic changes 2. Solar influences 3. Tree rings 4. Ar 5. Europe.**—*A.A.*

5I–203 551.311.184:656.7:551.311.17:656.7(2

Miller, Maynard M., **A flight in search of ice islands.** *Weatherwise*, 5(4):78–82, Aug. 19 3 figs. **MH-BH.** Also: Rücklin, H., **Schwimmende Eisinseln in der Arktis.** [Floating ice isla in the Arctic.] *Umschau*, 52(22):691, Nov. 15, **1952.** 3 figs. **DLC**—1) Account of flight made Aug. 1 and 2, 1951 from Eielson Field to Ellesmere Island and northward toward the geogra pole. Floating ice islands, T-1 and T-2 were sighted. Refers briefly to discovery and movement these two islands since first sighted. Author believes that these massive floating ice island Ellesmere "drifted westward with current of the Arctic Ocean, from Canadian to Alaskan possibly to Siberian waters, and eventually back again to the neighborhood of northern Greenla 2) Brief account with photos of 3 floating ice sheets. Suggests their use as bases for oceanograph and meteorological stations. Origin uncertain. *Subject Headings:* **1. Floating ice islands 2. A Ocean.**—*M.L.R.*

5I–204 551.543:519.2

Schumann, Theodor E. W. and Van Rooy, M. P., **Die Outokorrelasie van Daaglikse See Lugdruk oor die Noordelike Halfrond.** [The autocorrelation of daily sea level pressure over Northern Hemisphere.] *South Africa. Weather Bureau, W.B.* 17, June **1952.** 7 p. 11 ch 10 refs. In Afrikaans and English. **DWB**—The authors present a further valuable resu statistical studies based on the "Historical weather maps" of the U. S. Weather Bureau (*see item* 4.2–14, Feb. 1953, *MAB*). Autocorrelation coefficients are given for the intersections of 10° long. and lat. from 20°N to 60°N (except for 40°E to 140°E). The calculations are exte up to 30 days in the winter and, unfortunately, only up to 15 days in the summer. Maps repr the geographical distribution of autocorrelation coefficients for 1, 2 and 6 days (winter and sum of the wind speed in the 500 mb level (Jan. and July), of the annual range of autocorrelation c cients and the influence of long lasting anomalies ("secular" variations in the terminology o authors) on the autocorrelation. It is shown that there is a negative correlation between persis and 500 mb winds. The smallest persistence for the whole Northern Hemisphere is found northeastern United States and Japan; the greatest on the west coast of Europe, the Arctic ar eastern part of the Pacific. (*Same item as* 4.7–6, July 1953, *MAB.*) *Subject Headings:* **1. correlations 2. Persistence 3. Atmospheric pressure 4. Northern Hemisphere.**—*A.A.*

5I–205 551.58

Scultetus, H. R., **Auswirkungen und Ursachen der neuzeitlichen Klimaänderung.** [and causes of the present climatic change.] *Sternenwelt*, Munich, 4(5/6):84–87, **1952.** **DLC**—The author states that the problem of climatic change, involving possible drying up subtropics and continued warming of the sub-Arctic and Arctic, is the number one problem the world today. Evidence (both meteorological and indirect) of this warming, possible (solar, lunar or terrestrial) and consequences to life on earth are succinctly summarized speeding up of the general circulation (westerlies) is given as the direct cause of the warmi drying mentioned above. Carbon dioxide increase as an original cause is discounted on the g of insufficient instrumental accuracy of reported measurements. Other theories are cr examined. *Subject Headings:* **1. Climatic variations 2. Warming of Arctic 3. Atmospheric c tion 4. Arctic.**—*M.R.*

5I–206 551.593

Smiley, Charles H., **Atmospheric refraction at low angular altitudes in the polar regions.** *gation*, Los Angeles, 3(3):81–84, March **1952.** fig., 2 tables. **DWB**—Two tables giving cor on account of refraction of observed altitudes 10° to 1° for stars and planets (air temperat and −30°F, respectively) and two tables giving correction on account of refraction and semid correction to observed altitudes of the lower limb of the sun are presented. The tables ar upon measurements made between 1947 and 1951 at high northern and southern latitudes by observers, including the author. For details regarding observation techniques and mat reductions the reader is referred to two previous papers published by the author in *Na* March 1950 and Sept.–Dec. 1951. (*Same item as* 4.3–288, March 1953, *MAB.*) *Subject H* **1. Atmospheric refraction 2. Refraction phenomena 3. Arctic refraction.**—*G.T.*

5I–207 551.5

U. S. Weather Bureau, **Daily Series, Synoptic Weather Maps. Part 1. Northern Hem Sea Level and 500 Millibar Charts. Part 2, Northern Hemisphere, Sea Level and Upper A**

an. 1899–Latest recd. Sept. 1952. **DWB**—Title varies: Jan. 1899–June 1939 as **Daily Synoptic eries, Historical Weather Maps, Northern Hemisphere, Sea Level.** 486 v. pub. 1943–44. (July 939–Dec. 1944 charts have not been prepared; Jan.–Sept. 1945 in preparation by U. S. Air Weather ervice); Oct. 1945–Dec. 1948, as **Northern Hemisphere, Sea Level and 500 Millibar Charts,** (these ere published by the U. S. Air Weather Service, May 1948–Dec. 1948 charts now at the printer); Jan. 1949, U. S. W. B. resumed publication of the series on a current basis, and from Jan. 1949–ec. 1951, issued the series as **Daily Series, Synoptic Weather Maps, Northern Hemisphere, Sea evel and 500 Millibar Charts with Synoptic Data Tabulation.** Jan. 1952 above title and parts. *ubject Headings:* **1. Synoptic charts 2. Northern Hemisphere.**—*M.L.R.*

5I–208 551.311.181:001

World Meteorological Organization. Commission for Maritime Meteorology, London, July 952, **International ice nomenclature.** [1952?] 8 p. Reprinted from Its: **Abridged Final eport of the First Session. DWB**—Over 70 terms designating various types of ice found at sea re listed. Ice formed both at sea and on land (but not in rivers and lakes) is included. The terms re listed in a dual arrangement, first according to a numerical classification system and then alphabetically. The alphabetic part comprises definitions of each term. (Note the erroneous substitution f "Screw-ice" for "Shelf-ice" in the alphabetical section and the lack of reference from "Screw-ice" o "Pressure-ice"). *Subject Headings:* **1. Arctic sea ice 2. Ice terminology 3. Ice glossaries.**—*G.T.*

1953

5I–209 551.5:629.13(987)

Aircraft operation in the Arctic; investigations of the RCAF Climatic Detachment. *Shell viation News*, No. 8:7–9, June 1953. 2 figs., 2 photos. **DLC**—Report on investigations into the roblem of cold weather operation of aircraft carried out at Namao, Alberta; Watson Lake in the ukon and Churchill, on Hudson's Bay. The Climatic Detachment is presently concerned with he behavior of specific aircraft and with the equipment associated with them. The effect of wind hill on the efficiency of personnel has also been investigated. *Subject Headings:* **1. Arctic aircraft perations 2. Aeronautical meteorology 3. Arctic.**—*M.L.R.*

5I–210 551.5(05)

Arctic; Journal of the Arctic Institute of North America. Montreal, New York, Arctic Institute f North America, v. 1, No. 1, Spring **1948;** latest issued recd. v. 6, No. 4, Dec. **1953.** figs., maps, iagrs., tables. pub. twice in 1948; three times a year from 1949 on. Ed. by DIANA ROWLEY. **DLC**—The journal is devoted to information on Arctic regions and contains original papers on cientific investigations particularly in the North American Arctic, reports of progress in research, nd news concerning international Arctic research and projects sponsored by the Arctic Institute f North America. *Subject Headings:* **1. Periodicals 2. Arctic research. I. Rowley, Diana** (*ed.*).—*rctic Bibliography, No. 639.*

5I–211 551.578.46(988):551.311.121

Bader, Henri, **Sorge's law of densification of snow on high polar glaciers.** *U. S. Snow, Ice and ermafrost Research Establishment, SIPRE Research Paper*, No. 2, [1953]. 3 p. fig., 2 refs., qs. Paper formerly listed as Its *SIPRE Report*, No. 14. **DLC.** Also in: *Journal of Glaciology*, (15), April **1954. DWB**—SORGE assumed that for a stationary glacier, where there is no melting in ummer, the snow density versus the depth below the snow surface is invariant with time. The uthor uses this concept in order to derive the specific velocity of densification and shows that the nnual accumulation can be computed, knowing the rate of approach of two points and the density or these points. The depth-density curve itself is described by an empirical formula. A test with ata obtained at Eismitte, Greenland gave good results (average annual accumulation 314 mm water quivalent). (*Same item as* 5.1–241, Jan. 1954, *MAB.*) *Subject Headings:* **1. Snow densification . Snow density profiles 3. Glacier nourishment 4. Eismitte, Greenland 5. Arctic. I. Sorge, E.**—*I.A.*

5I–212 551.510.41:546.241(798)

Cain, Joseph C., **Ozone in the Arctic.** *Alaskan Science Conference, 2nd, Mt. McKinley National ark, Sept. 4–8, 1951, Proceedings*, p. 279–281, pub. [1953]. **DWB**—In the spring the max. O_3 oncentration in the entire atmosphere occurs at about 70°N (probably also at 70°S) and in the est of the year at 60°N. The results of chemical O_3 determinations at College, Alaska show that urface O_3 is greater in Arctic than in the lower latitudes by ratio of 3–1, and the ratio of total O_3 etween sub-arctic and temperate latitudes is about 2–1. Some subsidence of O_3 from ozonosphere o troposphere is indicated. Correlation between O_3 and weather is being attempted but results are

inconclusive in most cases. Further work is contemplated. *Subject Headings:* **1. Ozone in Arc**
2. Fairbanks, Alaska.—*M.R.*

5I–213 551.586:63(9

Dadykin, V. P., **Kak zhivet rastenie na kraĭnem severe.** [How plants grow in the far North] Moscow, Sel'khoziz, **1953.** 109 p. 24 figs. **DLC**—Climate, soils, general natural conditions a agricultural progress in the far North are discussed. Progress in agriculture is attributed to t application of modern agrotechnical methods. Thus agriculture has been made possible as north as lat. 68°–79°N in the European U.S.S.R. and lat. 70°–71°N in the Asiatic U.S.S.R. compar to previous lat. 65°–66°N. Almost at lat. 70°N crops such as potatoes, cabbage, carrots and turni and in some places even tomatoes, thrive: cucumbers are grown in greenhouses. Methods of sn melt and frost combat are also discussed. *Subject Headings:* **1. Arctic agiculture 2. Soviet Arc** —*M.W.S.*

5I–214 551.5:629

Fletcher, Joseph O., **The Arctic: Challenge to the Air Force.** *Air University Quarterly Revi* Wash., D. C., 6(3):52–62, Fall **1953.** chart, photo. **DLC**—Map shows the geographical advanta which the U. S. enjoys over Soviet Russia in the Arctic. Author enumerates advantages of ice island as a base of operations for investigation of the Arctic Basin; lists factors that have retar the development of operating "know-how" and tactical doctrine for Arctic air operations; outli natural characteristics of the region and points out advantages of these features to the milita reviews development of our technology which gives us new advantages for effective operations lists the desirable features for a general transport in the Arctic to replace the crude ski-wheel C *Subject Headings:* **1. Arctic aircraft operations 2. Arctic research 3. Arctic.**—*M.L.R.*

5I–215 551.311

Helk, J. V. and Dunbar, Moira, **Ice islands: evidence from North Greenland.** *Arctic*, 6(4):2 271, Dec. **1953.** 9 figs. **MH-BH, DLC**—Photographs and description of glacier ice imbedde fjord ice along N. coast of Greenland indicates that source is icebergs which have broken of Ryder or Flade glaciers, and structure is similar to that of ice islands north of Ellesmere to Icela Conditions which would account for phenomenon are reviewed. Currents are such that F Isblink icebergs would drift down east coast of Greenland, but Ryder Gletscher bergs might m into Arctic Basin and account for ice islands there. *Subject Headings:* **1. Floating ice islands 2. berg sources 3. North Greenland glaciers.**—*M.R.*

5I–216 551.583:634.948

†*Hustich, Ilmari, **The boreal limits of conifers.** *Arctic*, 6(2):149–162, July **1953.** 7 bibliog. p. 161–162. **DLC**—This article is rewritten by the author from an original Swedish p published in 1952. Polar charts show northern limits of spruce, fir, pine, larch (tamarack), jun and of these combined, and of all conifers. Different subspecies are mentioned in the text. line is differentiated from economic limits of forests, biological limit of forests and limit of sp and the latitudinal limit from that with altitude. Effect of Bering Strait as a phytogeogra barrier and of the Quaternary glaciation and the present climatic fluctuations in specific reg and with respect to various species are mentioned. Amelioration has been greater in Eura Arctic than in Canada. It is stated that no arborescent species is circumpolar. *Subject Head* **1. Phytogeographical boundaries 2. Forest succession 3. Climatic amelioration 4. Clim variations 5. Arctic.**—*M.R.*

5I–217 551.553:551.311.181:551.575

§Mertins, O. and Kruhl, H., **Windabschwächung und Nebelbildung am Eisrand.** [slackening and fog formation at the edge of the ice.] *Der Seewart*, Hamburg, 14(5):4–7, Oct. 4 figs. **DWB**—The sudden weakening of the wind which one observes on approaching the ice is described and its causes explained. The author observed the phenomena on the fishing groun Iceland in 1952 and 1953. The explanation given is that large ice fields cool off the lower air l and form a shallow cold air layer which becomes an obstacle to the flow of warm southwest air w cannot flow around the cold air because of its extent and thus is forced to rise over the upper boun of the cold air. Fog and drizzle form at the nose of the cold air. *Subject Headings:* **1. Wind v tions 2. Ice effects 3. Fog formation 4. Iceland.**—*A.M.P.*

5I–218 551.58

O'Bryan, Deric, (*U.S.A.F., Arctic Desert & Tropic Inform. Center, Maxwell, Ala.*), **Som it cold.** *Flying Safety*, Wash., D. C., 9(10):18–23, Oct. **1953.** photos. **DWB**—Notes on life i Arctic, especially for military personnel, and including references to clothing, shelter, wind etc. *Subject Headings:* **1. Human ecology 2. Acclimatization 3. Arctic.**—*M.R.*

5I–219 551.524.34

Péczely, György, **A téli hőmérséklet változásai az északi félgömbön.** [Variations of winter mperature in the Northern Hemisphere.] *Időjárás*, Budapest, 57(4):193–197, July/Aug. **1953.** figs., 4. refs Russian and French summaries p. 193. **MH-BH, DLC**—Changes occurring during e 20th century are investigated on the basis of 10-year averages of winter temperature and pressure 35 stations of the Northern Hemisphere and of S. PETTERSEN's calculations. It appears that along th a considerable warming of the Arctic region there was a cooling in Siberia as a result of changes pressure and cyclonic activity. It is of interest to note that winters also became colder in the ntarctic, this latter region thus showing temperature trends of a sign opposite to that of those of e Arctic latitudes of the Atlantic Ocean. *Subject Headings:* **1. Winter temperatures 2. Tem- rature trends 3. Warming of Arctic.**—*Author's abstract (trans.).*

5I–220 551.501.9(987):551.311.184

Rodahl, Kaare, **North: the nature and drama of the polar world.** N. Y. Harper, [1953]. 7 p. photos, map (on end papers), 2 charts, bibliog. p. 229–232. **DWB, DLC.** Also translated : **L'Archipel flottant (North).** [The floating archipelago. North.] Preface by J. O. Fletcher. ranslation by Josette Hesse. Paris, Arthaud, [1954]. 226 p. photos., diagrs. Collection xploration, No. 7. **DLC**—The author is a Norwegian physician now residing in the U. S. He ded in making the plans for Project Icicle, which resulted in the establishment by a U. S. Air Force am of a semi-permanent scientific and military observation station on T-3 (Fletcher's Ice Island) March 19, 1952 and was one of the group that made a preliminary landing on the island. Author's evious experience in Arctic research, pioneers of Polar research, including those whose expeditions ere by plane, and a description of the Polar Basin—ice conditions, weather, marine biology and onomic resources—are first covered. The remainder of the book describes the discovery of the e islands in 1946, the detailed planning of Project Icicle, the flight across the Canadian Archipelago om Alaska to Thule, the actual landing on T-3 (T for target) and the experiences of the thirteen ys the author spent there. *Subject Headings:* **1. Floating ice islands 2. Arctic weather stations Project Icicle 4. Fletcher's Ice Island 5. Canadian Arctic. I. Hesse, Josette.**—*M.L.R.*

5I–221 551.311.181(268)

Rodewald, Martin, **Zunahme der Eisdrift im Ostgrönlandstrom.** [Increase of drift ice in East reenland Current.] *Wetterlotse*, No. 60:161–166, Aug. **1953. DWB**—A forecast in summer 1952 increased polar ice in 1952/3, based on atmospheric circulation, was verified by near approach of Greenland ice to Iceland. Variations 1781–1939 are summarized. *Subject Headings:* **1. Arctic a ice 2. East Greenland current.**—*C.E.P.B.*

5I–222 551.311.173(987)

Source of gigantic ice island is sought on bleak Ellesmere by U. S.-Canadian party. *U. S. aval Institute, Proceedings*, 79(7):809–810, July **1953. DWB**—News item reprinted from *San rancisco Chronicle*, May 11, 1953 tells of joint U. S.-Canadian expedition to Ellesmere Island to y and discover the source of the ice which forms the large floating blocks of ice such as Fletcher's ce Island. It is thought that these islands break off of the shelf ice along the coast of Greenland the Canadian Archipelago. They seem to be centuries old; Ellesmere Island has an ice shelf 0–15 miles wide and 100–200 feet thick. *Subject Headings:* **1. Ice island sources 2. Shelf ice Ellesmere Island, Canadian Arctic.**—*M.R.*

5I–223 551.311.181(261)

U. S. Hydrographic Office, **Arctic ice and its drift into the North Atlantic Ocean.** 12th ed. S. Hydrographic Office. Pilot Chart of the North Atlantic Ocean, May **1953,** Supplement. ld. sheet. 6 figs. **DWB**—Refers briefly to formation of International Ice Patrol, managed by the S. and supported by various powers in proportion to their respective interests. Discusses forma- on and course of the West Greenland and Labrador currents and the Gulf Stream. Defines fferent types of field ice—storis, west ice and winter ice—and berg ice and reviews at length the asonal distribution of these types of ice in East Greenland, West Greenland, Southwest Greenland, obisher Bay, Hudson Strait, Hudson Bay, Labrador, Newfoundland, Gulf of St. Lawrence and and Banks. Visual and instrumental methods for detecting field and berg ice are included. nally, suggestions to be followed for any ship that must sail into the ice are listed. Charts show stribution of different types of ice, principal iceberg glaciers which discharge into Baffin Bay, drift icebergs from their source into Baffin Bay and drift tracks of icebergs, 1900–1940. *Subject adings:* **1. Arctic ice 2. Sea ice distribution 3. Ice drift 4. North Atlantic.**—*M.L.R.*

5I–224 55.03:06(09) 551.506.5(00)

Vassy, Étienne, **L'Année Géophysique Internationale 1957–1958.** [The International Geo- ysical year 1957–58.] *La Météorologie*, Paris, 4th Ser., No. 29:50–60, Jan./March **1953.** French,

English and Spanish summaries p. 50. **MH-BH**—This is a detailed outline of work done during t two past International Polar Years, and the program planned for the 1957–58 "Geophysical Yea Stations occupied in 1882–83 and 1932–33 are listed. Observations and investigations in fields radio, magnetism, auroras, rocket soundings, ozone, cosmic rays, aerology, synoptic meteorolo and astronomy networks recommended, etc. are also listed in outline form. Work will not be limit to high latitudes. *Subject Headings:* **1. International Polar Year research 2. International Ge physical Year program 3. International Polar Year, 1882–1883 4. International Polar Year, 193 1933 5. History of Polar Year.**—*M.R.*

5I–225 551.46(2

Worthington, L. V., **Oceanographic results of Project Skijump I and Skijump II in the Po Sea, 1951–1952.** *American Geophysical Union, Transactions*, 34(4):543–551, Aug. **1953.** 4 fi 3 tables, 5 refs. **DLC**—Hydrographic data (temperature and salinity) are given for 8 station the "mare incognitum," the Arctic Ocean north of America. According to an added map, o for the eastern part of the Soviet sector is oceanographic information still lacking. A large a cyclonic eddy was discovered as the probable oceanic circulation north of Alaska, suggesting existence of a submarine ridge across the Arctic basin. The observations were made from ice fl with the aid of naval planes. (*Same abstract as* 5A–85, Jan. 1954, *MAB.*) *Subject Headi* **1. Oceanic circulation 2. Arctic oceanographic data 3. Project Skijump 4. Arctic Ocean.**—*A*

5I–226 551.5:016

†Arctic Institute of North America, **Arctic bibliography.** Prepared for and in cooperation v the Department of Defense, under the direction of the Arctic Institute of North America. [M Tremaine (*ed.*)] Wash., D. C., Govt. Print. Office, **1953, 1954.** 4 v. 4478, 1591 p. Index (fold.) in back of each volume. Price: v. 1–3, $12.75 the set; v. 4, $5.50. **DLC**—The first 3 volu of this tremendous work has been 6 years in preparation. The 4478 pages include citations (brief descriptive abstracts in most cases) of 20,000 articles or books covering all fields of A science, arranged alphabetically by author, and in addition (in v. 3) a very thorough subject geographic place index, containing over 100,000 references and cross references, arranged u 18,000 headings (both by area under subject and subject under area). The geographic hea refer to the exact place as well as to the region, if appropriate. The merits of the system of ent author, original title, serial, translated title (into English), transliteration scheme, source of ma (library where copy was seen), list of 1300 serials, etc. as well as of the indexing system cann touched on here, but, needless to say, all are patterned according to the best bibliographic styl library practice, and the style of printing, entry, etc. are equally excellent. Owing to yea patient checking and rechecking, the accuracy of the entries, translations and indexing, t remarkably high for a compilation containing material in so many foreign languages. About of the material is in Russian, Scandinavian or German. There are over 1000 items indexed Meteorology and its subject and geographic subdivisions, 500 under Climatology, and scor hundreds of items under: Air temperature, Atmospheric pressure, Auroras, Climatic cha Clouds, Cyclones and anticyclones, Evaporation, Fog, Frost, Humidity, Ionosphere, Microcli Oceanography, Permafrost, Precipitation, Snow, Solar radiation, Upper air winds, Wind. At 25% of the articles are of interest to meteorologists or climatologists. Regionally, the ma covers most of Siberia, Lapland, Northern Canada, all of Alaska and Greenland, the Arctic and Labrador. Vol. IV, contains 7700 references to 1950–52 and earlier material stressing a in the fields of medicine, health, environmental adaptation and native peoples. This volum contains more material on Scandinavia and Finland. Vol. V, to appear late in 1954 or early will contain similar material through 1953. (*Same item as* 4.11–1, Nov. 1953, *MAB.*) *Headings:* **1. Arctic bibliographies 2. Arctic climatology 3. Arctic meteorology. I. Tre Marie (*ed.*) II. U. S. Dept. of Defense.**—*M.R.*

5I–227 551.50

U. S. Weather Bureau, Arctic Operations Project, **Arctic weather stations.** *Weather*, 9(5 139, May **1954.** photo. **MH-BH.** Also: Inglis, Peter, **Arctic weather men.** *Heartland*, D. C., 1(1):22–27, Summer **1953.** diagr., photos. **DLC**—The first article describes instal operation and observation program at joint Canadian-U. S. stations at Thule, Eureka, Alert, R Bay, Isachsen, Mould Bay and Nord. References are made to climate. The second is an a of the author's visit to Isachsen, Ellef Ringnes Island, during a yearly spring re-supply ope He was particularly interested in the personnel at the station and gives several thumb-nail s to illustrate why men choose appointment to Arctic weather stations. A chart shows the l of Isachsen and the other 4 stations in the Canadian Arctic. *Subject Headings:* **1. Arctic w stations 2. Canadian Arctic.**—*C.E.P.B., M.L.R.*

1954

5I–228 550.38(98)

Mayaud, Pierre-Noël, **Sur la forme de la variation $D_s - S_q$ du champ magnétique dans les gions polaires.** [On the form of the variation $S_s - S_q$ of the magnetic field in polar regions.] *nnales de Géophysique*, 10(1):89–92, Jan./March **1954.** 2 figs., 4 refs. **MH-BH**—Vectorial agrams representing variations of the geomagnetic field at 3 points between 75–79°S lat. and 7 oints between 58–88°N lat. are presented and commented on. The diagrams are based on 12- onth records (1932–33) for the northern stations and 10–22-month records (1911–13 and 1951–52) r the southern stations. The comments are mainly concerned with the difference in the forms and ientations of the diagrams resulting from the differences in the stations' location in relation to the ıroral zones. *Subject Headings:* **1. Terrestrial magnetism 2. Polar Regions.**—*G.T.*

5I–229 551.5:91.04(05)

†**Polar Record,** Cambridge, Eng. v. [1], No. 1, Jan. **1931;** latest issue recd. V. 7, No. 48, July **954.** Sub-title: "A Journal of Arctic and Antarctic Research." Issued by the Scott Polar Re- arch Institute Cambridge, Eng. Edited until 1945 by Dr. Frank Debenham and subsequently y an editorial committee. Pub. semiannually. Includes section "Recent Polar Literature" alled 1931–38 "Recent Polar Books"). **DLC**—Articles of historical, scientific or technical nature ı exploration and research in both polar regions as well as notes on expeditions in the field and ojected expeditions, correspondence, obituaries, bibliographies and reviews are included. Com- ehensive and briefly annotated bibliographies have been a feature since 1939. *Subject Headings:* **Periodicals 2. Arctic expeditions 3. Arctic bibliographies. I. Polar Scott Research Institute.**— *L.L.R.*

5I–230 551.586

Porsild, A. E., **Land use in the Arctic—Part I.** *Canadian Geographical Journal*, 48(6):232–243, ıne **1954.** photos. . . . **Pt. II,** *Ibid.*, 48(7):20–31, July **1954.** photos. **DLC**—Article opens ith a brief discussion of the use of Arctic plants as a source of food, fuel, floor covering, basketry, ıing for winter boots and mittens, wicks for seal oil lamps and dyeing. Then points out that orth of the tree line, in some parts of the Arctic north to lat. 70° or beyond, hardy vegetables are own under glass. Photos show gardens at Jacobshavn, Greenland, 69.5° and Aklavik, Canada's rgest Arctic town. The bulk of the paper deals with the real importance of Arctic plants—to ovide food for grazing and browsing animals. The plant life available on both the winter and ımmer range is described in detail. Reindeer herding is being successfully maintained on a large ale in some parts of the Arctic because of sufficient plant life. Author believes the Canadian rctic could probably support 100,000,000 head of domesticated reindeer—if people could be found ho would live the strenuous life of reindeer herders. *Subject Headings:* **1. Arctic plant life 2. Rein- eer herding 3. Arctic.**—*M.L.R.*

5I–231 551.594.5:016(98)

†Rice, Mary L. and Rigby, Malcolm, **Selective annotated bibliography on auroras.** *Meteoro- gical Abstracts and Bibliography*, 4(10):1162–1213, Oct. **1953. DWB.** And . . . **on auroral hysics.** *Ibid.*, 5(3):373–424, March **1954. DWB**—The first bibliography contained 248 references o articles in English, French, German, Norwegian, Swedish and Russian on auroral forms, dis- ribution, frequency, height and intensity as well as descriptions of unusual auroras. The second ibliography contained 263 references to literature in the several languages mentioned above. The mphasis in this bibliography was on the instruments and techniques of auroral research, theories on ıe origin of this phenomenon, auroral solar and magnetic relationships, auroral spectra and auroral ıvestigation of the upper atmosphere. *Subject Headings:* **1. Auroral bibliographies 2. Arctic.**— *f.L.R.*

5I–232 551.578.4:551.556:001

Swithinbank, C. W. M., **Terminology of snow surface forms.** *Polar Record*, 7(47):53, Jan. **954. DLC**—The Committee on Snow Classification (International Assoc. of Sci. Hydrology, Commission on Snow and Ice) has proposed the use of *skavler* to describe wind erosion and deposion f snow which results in sharp-edged irregularities. Drift, snow dune, snow barchan and snow ipple are used for smooth and rounded snow surface forms developed by wind. *Subject Headings:* **. Snow surface form terminology 2. Wind effects 3. Terminology.**—*M.L.R.*

5I–233 551.524.5:016 551.578.4:016 551.588.5:016

†U. S. Snow, Ice and Permafrost Research Establishment, **Annotated bibliography on snow, ice nd permafrost.** First vol. recd. v. 1, Sept. 1951; latest vol. recd. v. 6, July **1954.** *U. S. Snow, ce and Permafrost Research Establishment, SIPRE Report,* No. 12. Semiannual since 1953 (Jan. . 3, July v. 4) 6 v. **DLC**—The 6 volumes contain 8500 abstracts of articles dealing with all phases

of snow, ice, frost and freezing processes in the earth, on water surface and in the air with empha on engineering problems in the Arctic. Vol. 1–3 contain author-title indexes; Vol. 4 and 5 conta author, title and subject indexes and in addition Vol. 4 contains a cumulative subject index for t first 4 volumes (p. 330–360); Vol. 6 contains cumulative author, title and subject indexes for t first 6 volumes (p. 243–366). The bulk of the references in the first 4 volumes is to material pu lished since 1950; Vol. 5, however, contains considerable material published in the earlier 190 *Subject Headings:* **1. Snow, ice and permafrost bibliographies 2. Bibliographies.**—*M.L.R.*

5I–234 551.501.9(2

Van der Ham, C. J., **Meteorologisch station op enn ijseiland, vlak bij de Noordpool.** [M teorological station on an ice island, close to the North Pole.] *Hemel en Dampkring*, 52(4):82– April **1954.** 2 figs. **DLC**—Account of landing of C-47 with skiis on Fletcher's Ice Island and establishment of a meteorological (synoptic reporting) station about 100 miles from the No Pole; a chart shows location and movements of ice islands T1, T2 and T3 in relation to Arctic Ba and Pole. *Subject Headings:* **1. Floating ice islands 2. Arctic weather stations 3. Fletcher's Island 4. Arctic Basin.**—*M.R.*

5I–235 91.04:62

Victor, Paul-Émile, **The supply of expeditions by aircraft.** *Polar Record*, 7(47):24–31, J **1954.** illus., 4 figs. **DLC**—During Expéditions Polaires Françaises (Missions Paul-Émile Vic to Greenland ice sheet, 58 flights were made from 1949–1951 to drop supplies. Table shows num of flights, successful flights, flying hours, tons dropped, percentage of loss and damage, etc. Sugg methods of overcoming navigational problems and discusses at length the technique of dropp supplies. Figs. show points supplied by aircraft, method of finding the supply point and layou the dropping zone. *Subject Headings:* **1. Arctic expeditions 2. Arctic aircraft operations 3. Exp tions Polaires Françaises, 1949–51 4. Greenland.**—*M.L.R.*

SUPPLEMENTARY MATERIAL

5I–236 551.311.181

Kissler, Friedrich, **Eisgrenzen und Eisverschiebungen in der Arktis zwischen 50° West 105° Ost im 34 jährigen Zeitraum 1898–1931.** [Ice limits and their movements between 5 and 105°E during the 34-year period 1898–1931.] *Beiträge zur Geophysik*, Leipzig, 42(1):12 1934. 14 tables, 5 maps, 9 figs., foot-refs., bibliog. p. 54–55. **DLC**—Presents data on th boundaries of the Arctic regions between 50°W and 105°E and their alterations and fluctua and discusses the causes of the variations in the extension of the ice. The changes in the ice-cov are caused by and dependent on the extension, direction, celerity and the heat-character o oceanic currents and the tidal waves, the yearly and centennial course of the heat-phases and changes, the currents of air, the yearly distribution of the winds and their changes, and the form of the coasts of the Arctic Ocean and the formation and depth of the sea-bottom. *Subject Head* **1. Arctic ice movement 2. Arctic Ocean.**—*Author's abstract* (*trans.*).

5I–237 551.506.5

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PART III. METEOROLOGICAL ARTICLES APPEARING IN RECENTLY ISSUED PUBLICATIONS

Note: The contents of periodicals included in this section, are for information only, and will not be listed in the monthly indexes. When material is furnished in advance of date of publication the pagination may be omitted.

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Ehrlich, Albert: **Subsurface density inversions off Nantucket Island,** p. 573–584.

Freeman, John C., Jr.: **Note on a prediction equation for the surface layer of a two-layer ocean,** p. 585–587.

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Kovner, Jacob L. and Evans, Thomas C.: **A method for determining the minimum duration of watershed experiments,** p. 608–612.

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Collmann, Wolfgang: **Idealwerte der Globalstrahlung,** [Standard values of the global radiation], p. 117–122.

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